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ON
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THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE

Earnings of Coal Miners

By Anne Bezanson

Assistant Director, Department of Industrial Research, Wharton School, University of Pennsylvania

THE subject of the earnings of coal miners is a large one to cover in a short paper. There are some one hundred odd separate occupations for men engaged *in and about* the mine of an anthracite colliery. While the number of occupations is somewhat less in bituminous, the diversity of occupation is still very considerable. The United States Coal Commission found it necessary to separate forty major occupations in anthracite and twenty in bituminous mines, in order to study even the most important differences in earnings groups. This paper, therefore, can deal only with the most salient conclusions for the main occupational classes. Three things should be kept in mind in using the earnings tables prepared by the Coal Commission.

(1) The tables as published do not show annual earnings.

(2) The data was purposely compiled to stress any existing variations in earnings within occupations.

(3) The scope of the study did not allow time for analysis and interpretation of data at the time of publication.

The earnings tables of the Coal Commission were prepared to show the relation of earnings to time worked in considerable detail. The earnings for individual employes were grouped in intervals of $100 for amount received while employed at one mine. Such a grouping was planned to bring out differences in earnings where such differences existed for the same occupation. The figures given are not, therefore, the annual earnings of any employe who shifted during the year. In attempting in this paper to give summary figures for earnings, I am obscuring the variations upon which the Coal Commission reports tend to lay most stress.

It should be remembered also that the Coal Commission was necessarily occupied with an enormous problem of collection and tabulation. In getting together the mass of data, it was more important to provide the primary facts than to get a few outstanding but oversummary conclusions. Everyone recognizes the necessity of sifting and interpreting statistical data collected in this way. However, the enormity of the task of tabulating earnings material did not leave sufficient time after the tabulation was done for detailed interpretation of all the data. The figures will, therefore, be the basis for discussion for some time by students interested in careful study of the problems of earnings in coal. Three facts should be borne in mind in using the summarized data: first, that one is obscuring important variations; second, that the earnings figures must be interpreted in connection with the wage rate, turnover and irregularity studies of the Commission; and third, that the figures published do not give annual earnings.

Earnings in the industry can be summarized for three major occupational groups. The piece work, or tonnage occupations, comprise in anthracite collieries the contract miners and their laborers. In bituminous mines there are three important groups: *machine miners* engaged in operating the coal

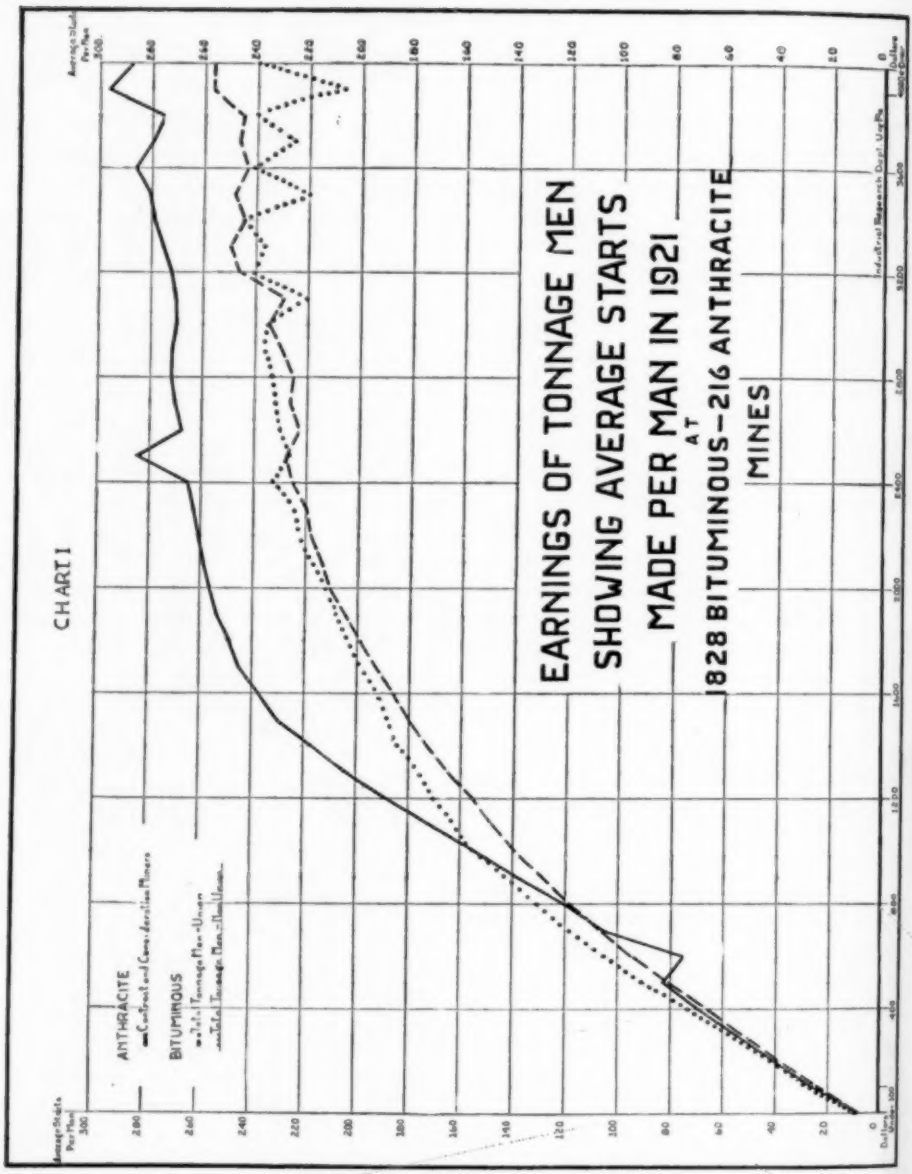


CHART I
EARNINGS OF TONNAGE MEN
SHOWING AVERAGE STARTS
MADE PER MAN IN 1921
AT
1828 BITUMINOUS—216 ANTHRACITE
MINES
ANTHRACITE
BITUMINOUS

under-cutting machines; *pick miners* engaged in under-cutting by pick, and shooting and loading their own coal; *loaders* engaged in shooting and loading the coal that has been under-cut by the machines.

About 28 per cent of all employes in anthracite, and 16 per cent in bituminous, work on the surface and will be referred to as *outside day men*. The men engaged in haulage, maintenance of the way, and regulation of ventilation are paid generally on an hourly basis and are referred to as *inside day men*.

RELATION OF EARNINGS IN BOTH INDUSTRIES

It is well, first, to consider the relation of earnings for tonnage workers in the anthracite and bituminous industries. To facilitate comparison, charts have been prepared of the time worked to make a given amount of earnings, by contract miners in anthracite and by all tonnage workers in bituminous. Chart I shows the time worked by contract miners in each earnings interval by the solid black line; the dotted line shows the time of non-union tonnage men, and the broken line union tonnage for the same earnings classes. The curves show striking differences in the number of days[1] worked for the same earnings class. It is apparent that in all intervals up to $800, the time worked is almost identical for union tonnage and anthracite contract miners. Above $800 tonnage men in bituminous fields work fewer days in each earnings interval than do contract miners in anthracite, the greatest difference being found at the $1,800 division, with a range of 50 days in working time. The similarity of working time in the first eight intervals is surprising when compared with the wide difference in time in the higher earnings intervals. One would have expected the bituminous curve to have been below the anthracite curve throughout the whole earnings register.

Two causes account for the discrepancy: First, the turnover is higher in the bituminous group. This means that a relatively large number of men in the bituminous industry remain only a few days on the payroll of one mine. The earnings tables indicate that men do not make normal earnings in the industry until they have been a considerable time in the employ of one mine. The weighting of the bituminous curve with this group of short service workers tends to increase the time worked and bring the curve closer to the anthracite curve. The second cause is of equal importance, namely, that the average length of start is shorter, if considered throughout the year for all mines, in the bituminous industry than is the start in the anthracite field. Some of this is due to the practice of assigned cars and some to the more irregular operation of the industry.

Turning to the curve of tonnage men in the non-union field, it is apparent that in all earnings classes up to $1,000, tonnage men work more days than either anthracite or bituminous. Attention is directed to the earnings intervals above $3,000, showing non-union men working fewer days in the same interval than in the union area. Here, however, the number involved is inconsiderable. The important stress in this comparison should be put upon the space between the curves for days worked in anthracite and bituminous in the intervals from $800 to $3,500. For part of this spread, namely, between $2,200 and $3,200, there is only a difference of 10 days in working time in the anthracite industry. This indicates a rather wide variation in the opportunity of earnings for men work-

[1] Where time is given for tonnage men, the number of times the employe made a start may or may not mean a full eight-hour day.

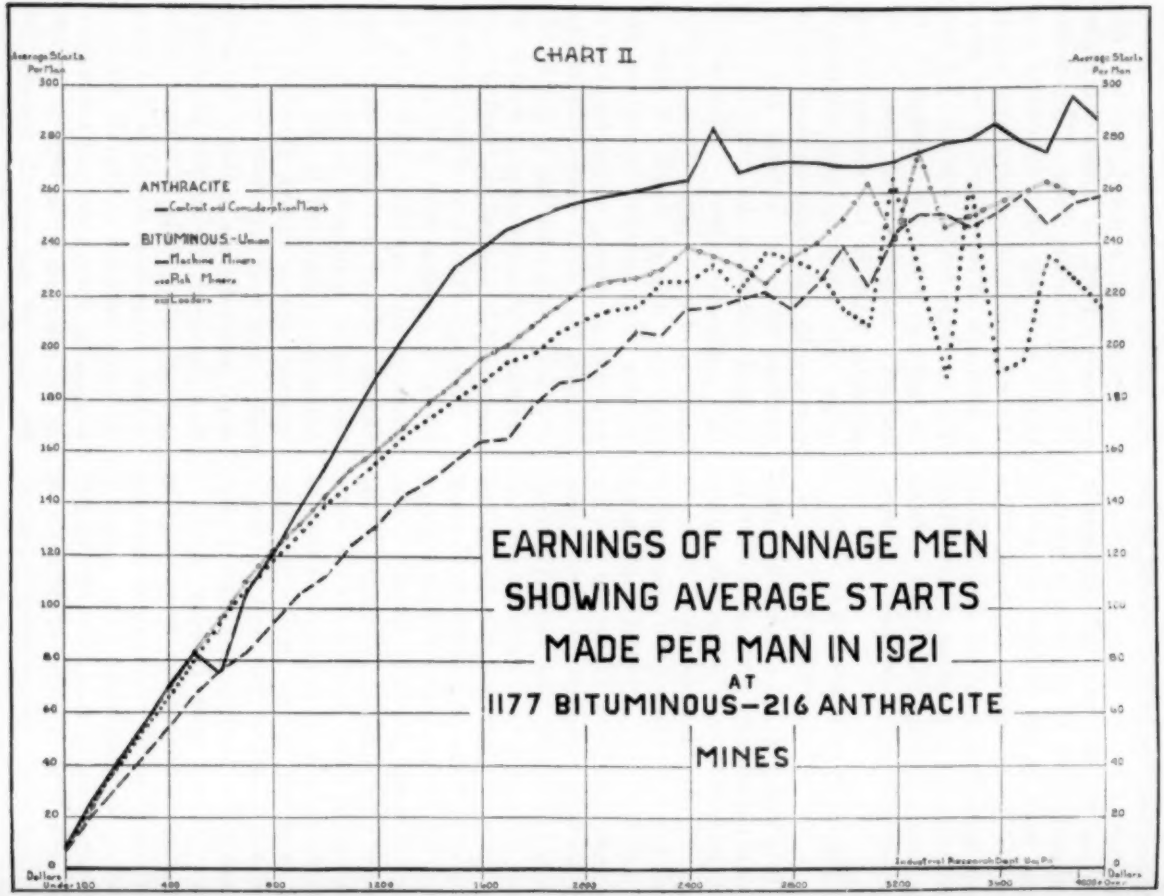
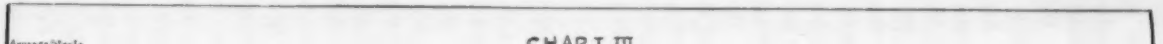


CHART II
Average Starts Per Man
Average Starts Per Man
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
ANTHRACITE
—Contract and Consideration Miners
BITUMINOUS - Union
—Machine Miners
---Pick Miners
---Loaders
EARNINGS OF TONNAGE MEN
SHOWING AVERAGE STARTS
MADE PER MAN IN 1921
AT
1177 BITUMINOUS—216 ANTHRACITE
MINES
Industrial Research Dept. Swarthmore
Dollars
Under 100
400
800
1200
1600
2000
2400
2800
3200
3600
4000 & Over
Dollars



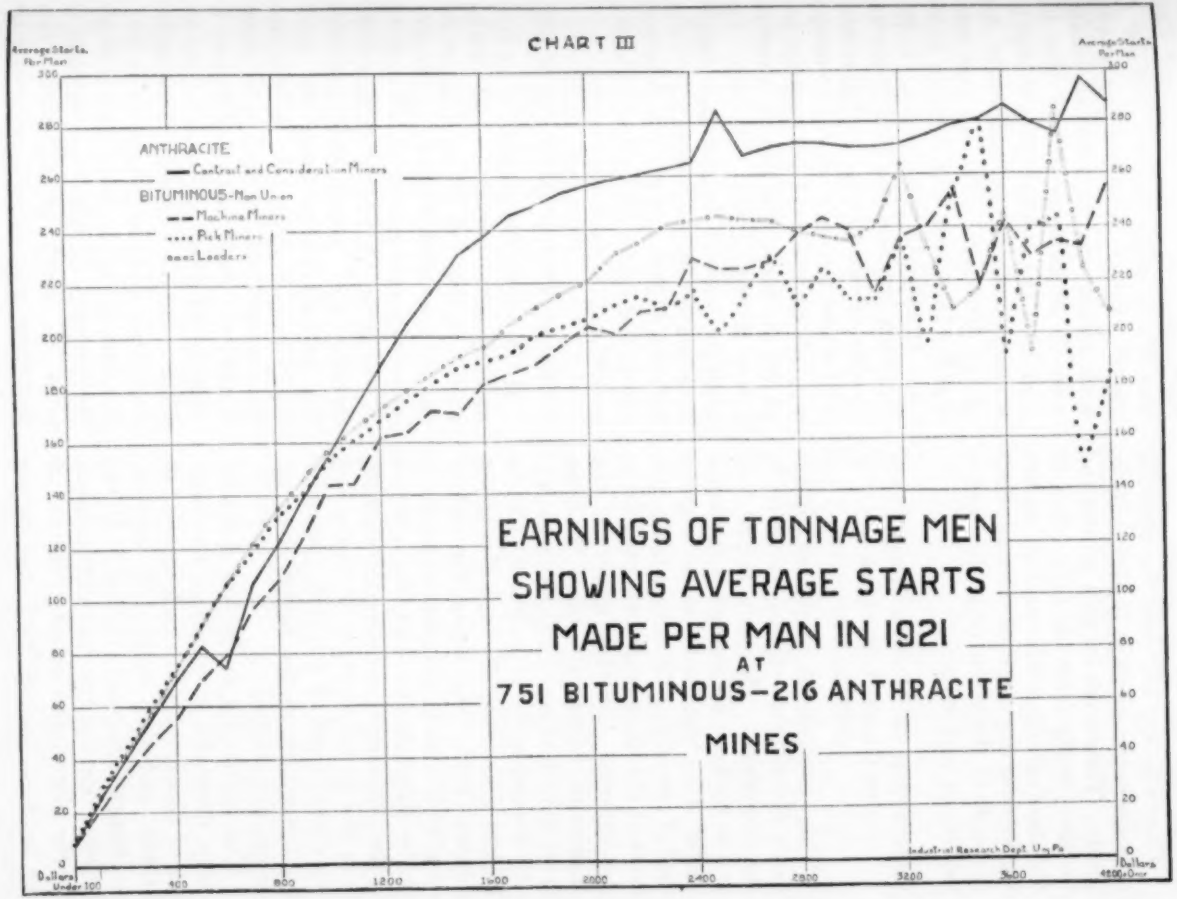


CHART III
Average Starts Per Man
ANTHRACITE
Contract and Consideration Miners
BITUMINOUS-Non Union
Machine Miners
Pick Miners
Loaders
EARNINGS OF TONNAGE MEN
SHOWING AVERAGE STARTS
MADE PER MAN IN 1921
AT
751 BITUMINOUS—216 ANTHRACITE
MINES
Industrial Research Dept. U. of Pa.
Dollars
Under 100
400
800
1200
1600
2000
2400
2800
3200
3600
4000 & Over

ing almost an identical number of days. The comparison indicates clearly that earnings per start made are higher in bituminous than in anthracite.

Charts II and III show the separate tonnage occupations in the bituminous group. The curves for pick miners and loaders closely resemble each other in the union group, while machine miners work fewer days in each earnings class throughout the whole scale than either loaders or pick miners.

PROPORTION OF MEN IN HIGH EARNINGS CLASSES GREATER IN ANTHRACITE

This comparison, however, disregards the number of men involved in the industries. The only factor that has so far been considered is the number of days worked to make a given unit of earnings. When one takes into account the number of men involved in the different earnings intervals, the anthracite industry makes a more favorable showing, since the opportunity for employment is greater. Charts IV and V show that the bulk of contract miners, when one takes the actual number of men by earnings intervals, is in the intervals above $1,000, whereas in the bituminous industry the massing is in the lower earnings intervals, and the curve slopes off gradually, containing fewer men as the higher earnings groups are reached.

The anthracite curve, on the contrary, decreases gradually in the number of men involved in each interval to $1,000, and then begins to increase, reaching a high point at about $1,800 to $1,900. Even if the year 1920 is taken for the bituminous industry, instead of the inactive year of 1921, the curves show the same general outline, although the numbers in the higher earnings classes are then more significant. This raises the question of what the actual average earnings are in the two fields.

AVERAGE YEARLY EARNINGS IN 1921

What, then, is the average number of starts made by contract miners? What was the average annual earnings in 1921? How do these earnings compare with annual earnings for all tonnage men in bituminous mines? For the year 1921 the average time worked by contract miners in anthracite was about 250 days. The average earnings for that year was between $1,900 and $2,000—to be exact, $1,922. Nineteen hundred and twenty-one was a year of inactivity in bituminous. The union group of miners averaged only about 134 days per tonnage employe; the non-union made a somewhat better showing, with 151 days. The average earnings for tonnage men in both union and non-union groups were between $1,000 and $1,100; to be more exact, the figure was $1,034 in union and $1,051 in non-union mines.

AVERAGE YEARLY EARNINGS IN 1920

If the year 1920 were used for bituminous, the average days worked would be 219 for union tonnage and 221 for non-union tonnage. This gives an average earnings of $1,750 to $1,800 in the year 1920 among bituminous tonnage men. It should be noted that the average starts made are about thirty less (roughly one month) than the average starts for anthracite miners in the year 1921, with a difference in earnings of $156, in favor of the anthracite contract miner. It is understood that all these comparisons in anthracite are made for a period before the present 10 per cent increase in rates. It should be understood, also, that these are not the average earnings of full year men, but a figure which is based on all tonnage workers. The figure for earnings of full year workers in anthracite is not available. In bituminous mines the average earnings of

CHART II
NUMBER OF MEN ON PAYROLL
SHOWN BY EARNINGS CLASSES
FOR CONTRACT MINERS IN ANTHRACITE
AND ALL TONNAGE MEN IN BITUMINOUS
1921
ANTHRACITE-216 Collieries (Scale at Left)
Contract and Company Miners
BITUMINOUS-(Scale at Right)
Total Tonnage Men-Union-1177 Mines
Total Tonnage Men-Non-Union-751 Mines
Dollars
Under 200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
Dollars

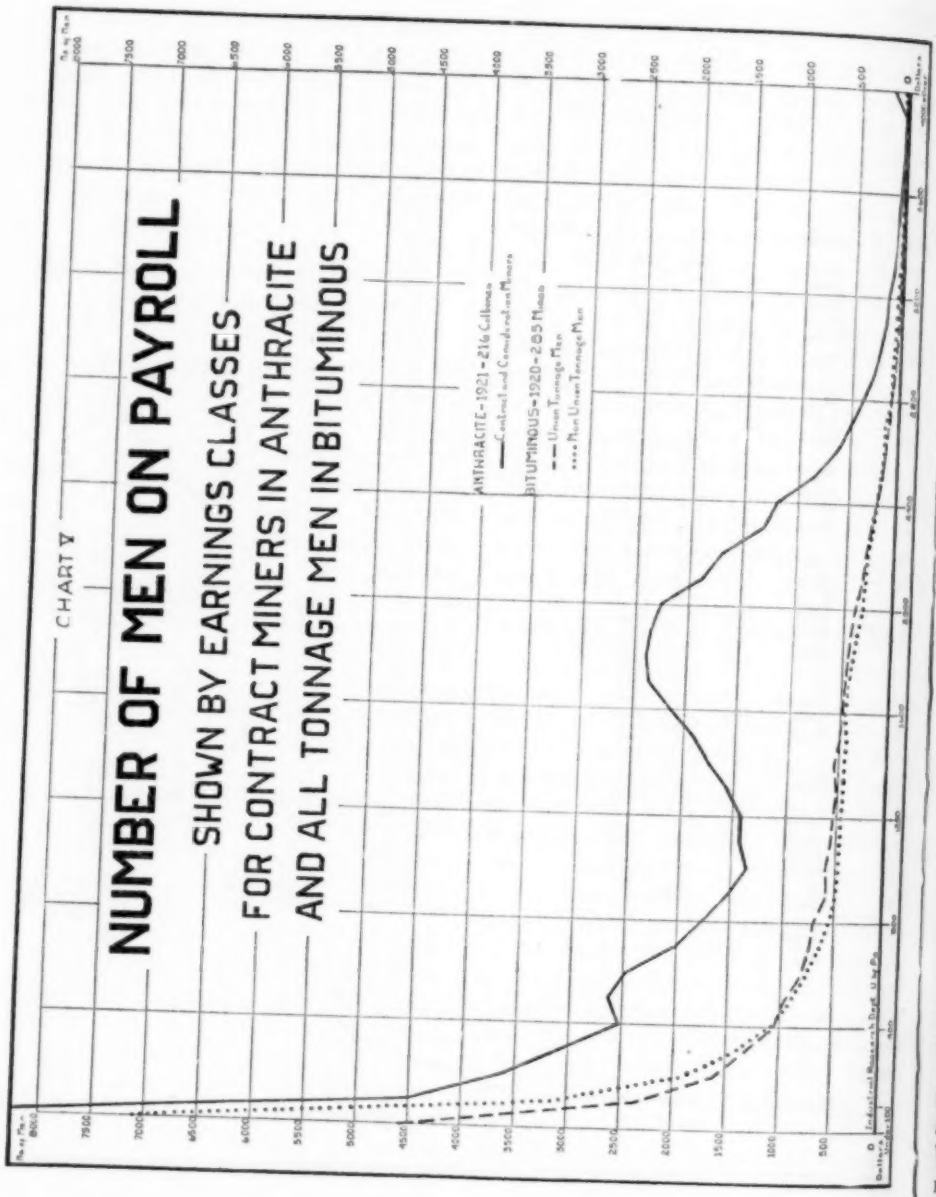


CHART V
NUMBER OF MEN ON PAYROLL
SHOWN BY EARNINGS CLASSES
FOR CONTRACT MINERS IN ANTHRACITE
AND ALL TONNAGE MEN IN BITUMINOUS
ANTHRACITE-1921-216 Collieries
Contract and Consolidation Miners
BITUMINOUS-1920-285 Mines
Union Tonnage Men
Non Union Tonnage Men

full year employes are about $400 higher than the figure for average earnings of all employes, or about $1,425 to $1,450 for tonnage men in 1921 and $2,025 to $2,075 for 1920.

One group of tonnage men in the anthracite industry should not be compared to any of the occupations in the bituminous industry. This is the laborers of contract miners, who work for the miner, and are paid a proportion of the miners' gross earnings. The figures show that this group shifts more than any men in any part of the coal industry. There is no considerable number remaining on the payroll of any one mine for the course of a year to give a figure upon which to base annual earnings. The figures as collected by the Coal Commission show earnings of $1,200 for about 200 days' work. There is no reason to think that this is the average working time of contract miners' laborers, since there is a real shortage of laborers and little time is lost in shifting from job to job. It would certainly be fair to take the average days worked by contract miners, and the average daily earnings, which is $5.87, and arrive at a figure of income between $1,450 and $1,500 ($1,468) for the year 1921. This is, however, an estimated figure, and is not arrived at by the careful calculations upon which the other figures are based.

At this point, I may say that the average earnings were prepared from the tables published by the Coal Commission and the average days worked were secured from these tables. The figures were then checked by using the average daily earnings found by the Wage Rate Section of the Coal Commission and the number of employes involved were checked with the turnover figures. This makes three sources for verifying the final conclusions, and it is fair to add that the computations agree very closely, there being a difference of only a few cents in the daily earnings as computed by use of the different sources of data. If one were to add the contract miners' laborers' earnings to those of contract miners, the average earnings for all tonnage workers in anthracite would be about $1,780 in 1921 for an average working time of 250 starts.

A further summary comparison is possible in connection with the earnings of tonnage men. When weight is given to the number of men in each $100 interval of earnings, an average earnings per start figure is secured of $7.75 to $8 for anthracite contract miners and all unionized bituminous tonnage workers, there being a difference of only four cents per day in the average earnings per start in the two groups in 1921. In the non-union field the average earnings per start is about 75 cents less than in either anthracite or bituminous, falling between $7 and $7.25 per start.

In the discussion up to this point, the earnings of the men engaged in actually mining coal have been covered. The tonnage group constitutes almost three fifths of all employes in bituminous and slightly over two fifths of anthracite employes. The remaining employes are divided into outside and inside day occupations. The employes paid by the hour have frequently opportunity for employment when the mine is idle. They normally work more days in a given year than men whose work is dependent upon the hoisting of coal.

EARNINGS OF OUTSIDE DAY MEN

No comparison should be made between anthracite and bituminous for outside day occupations, taken as a whole. The anthracite industry is equipped with elaborate facilities for preparing the coal for market. The proportion of outside employes used in washing, breaking and sizing the coal

is very much greater than any group of workers outside a bituminous mine. Besides, 11 per cent of all outside day workers in anthracite are slate pickers, mainly boys. There is no comparable group engaged outside a bituminous mine. If one excludes boy employes, and takes all outside workers in anthracite in the year 1921, the average eight-hour days worked per man was about 293. The average earnings was about $1,320. In the bituminous industry outside union workers averaged $1,445 in 207 days; non-union workers averaged about $1,200 in 218 days. The year 1920 gave more opportunity for employment of day men. Outside workers averaged $1,850–$1,875 for union and $1,700–$1,750 for non-union earnings. It will be seen that outside day men even in 1921 made higher earnings in the bituminous than in the anthracite industry. In the year 1920 the difference was as great as $400 to $500 between the outside workers in the two industries. It should be recalled that one is here comparing the year 1920 in bituminous with 1921 in anthracite. The comparison, however, is a fair one, since the year 1920 is only six days above the average operation of the bituminous industry for the last twenty years and the year 1921 is an average year in anthracite. The occupations are, however, widely different.

EARNINGS OF INSIDE DAY OCCUPATIONS

Inside day occupations are higher paid than are outside employments. However, there is less overtime in outside occupations and the opportunity to add to earnings is somewhat less in inside than in outside day occupations. The union mines averaged 175 eight-hour days for inside men in 1921 with an average earnings of $1,293. The inside non-union men averaged about 189 days with an average earnings of about $1,125. Anthracite averaged about 290 eight-hour days with an average earnings of $1,480. It will thus be seen that the inside worker in anthracite made somewhat higher earnings than the inside day man in either union or non-union bituminous mines, but his working time was 100 days more than either. In 1920 the earnings of inside day men in the bituminous industry were about $1,600.

The figures already given for day men include all short-service men. If full year employes alone were considered and all inside and outside day employes grouped, the average earnings in the bituminous industry would be about $1,850 in 1920 and $1,570 to $1,600 in the less regular operation of 1921.

Perhaps the separate occupations can be more easily compared by the average daily earnings of a selected group of well-known occupations. The content of work covered by the same name is not necessarily identical between fields or even within fields and it will be remembered that the opportunity for employment is not the same in the two industries. Yet in so far as any comparison can be made, these are indicative of the earnings of an eight-hour day in the various fields.

Looked at in a broad way there was in 1921 a surprisingly balanced relation between the average earnings per start by contract miners in the anthracite industry and the tonnage workers in bituminous. When the whole year is considered the anthracite miner earned more by reason of more continuous operation; when the earnings classes are considered, miners in classes above $1,200 are about four times as great as in bituminous.

The real difference in the industries is found in the earnings of day men. Here there is a difference in daily earnings of roughly $1.75 to $2.25 a day in

EARNINGS OF COAL MINERS

Average Daily Earnings in Fifteen Day Occupations in Anthracite and Bituminous

OCCUPATIONS	ANTHRACITE	BITUMINOUS	
		Union	Non-Union
Outside:			
Blacksmith	$5.35	$7.57	$6.36
Carpenter	5.27	7.14	5.94
Engineer	4.98	7.29	5.97
Fireman	4.76	6.95	5.41
Stableman	4.28	6.07	5.07
Laborer	4.26	6.55	4.58
Miscellaneous	4.38	6.74	5.37
Inside:			
Bratticeman	5.19	7.42	5.96
Doortenders	3.18	7.48	4.26
Drivers	4.67	7.47	6.22
Pumpman	5.10	7.14	5.53
Timberman	5.89	7.52	6.26
Track layers	5.22	7.35	6.09
Laborers	4.92	7.16	5.08
Miscellaneous	4.96	7.41	5.99

favor of the bituminous worker. Even with this difference the inside day worker earned about $200 more in 1921 in anthracite than in bituminous by reason of more working opportunity.

In the case of outside workers the annual earnings as well as the daily earnings were lower in anthracite than in bituminous.

In 1921 contract miners in anthracite averaged about $1,922 making 250 starts; contract miners' laborers in the same working time would earn about $1,465–$1,470. During the same year inside day men in anthracite had about 40 eight-hour days more opportunity for employment and averaged $1,475–$1,500, while outside day men by working an average of three more days than inside men earned $160 less. When boys are excluded from this outside computation the yearly earnings of outside men fall from 8 to 8½ per cent lower than those of inside day men. Judged from the point of view of spending power the contract miners' laborers are in about the same position as the inside day men in anthracite, owing to the opportunity of the latter for earnings when the mine is idle.

The real problem of earnings in the coal industry is due to the wide fluctuation above and below the average, variations due in part to seam conditions. For this problem attention must be given to the detailed reports published by the United States Coal Commission for rates and earnings.

Living[1] Conditions Among Coal Mine Workers of the United States

By Marie L. Obenauer

Director, Industrial Survey and Research Service, Washington, D. C., Chief Investigator, Living Conditions Studies

THE base of mining operations is under human control in less degree than is the base of operations in any other industry. Manufacturers choose locations offering the best known facilities for production, including an adequate labor supply. The modern developments in irrigation have extended vastly the possible choice of food-producing areas, and soil chemistry has added unmeasured spans to our fertile soils. But the coal mine operator and coal mine worker can get coal only from the earth bins in which nature has stored it. These bins are located with no regard to human convenience and once emptied they are not refilled. Hence, labor must not only go to the mining industry in the first place, and often over considerable distances from normal population centers, but it must follow the industry as one after another the storage places are emptied into the furnaces of manufacture and commerce. Therefore, location of the coal fields, a subject of major importance in studies of coal mine engineering, cost of coal production and coal distribution, is also a factor of telling influence upon the livability of the community in which the mine worker must abide while he labors in the mine.

The Coal Fields

To one not versed in the unerring logic of earth formations, a panoramic picture of the great coal fields would appear to be a striking demonstration of nature's caprice in bestowing her gifts of hard and soft coal. While anthracite mine workers need not go outside of a few compactly located counties of Pennsylvania to dig hard coal, the bituminous coal operators and coal mine workers are following soft coal seams of considerable thickness into more than half the states of the union (see table)—over table lands, up mountain sides and over mountain tops, through rolling valleys, along creek and river beds and beneath the soils of what once were fertile farms. In Pennsylvania and Ohio and in the central western regions, most of the bituminous coal mine workers dig and live in level, rolling or mountainous country that was, and in many cases is now, the scene of agricultural or other activity. In these coal regions many centers of normal community life had grown into vigorous maturity before mining operations were begun. But the bituminous operators and mine workers who are extracting coal from the seams running through West Virginia, Kentucky, Tennessee, and other fields in the Appalachian areas, must trail the coal into gorges, ravines and recesses that are far removed from any city or town, and that never had been the scene of modern industrial activity before the initiation of coal mining operations. Of course, where the coal seams go there must go both the operators and the coal mine workers who would have the coal, but with this difference: the mine workers—those with, and those

[1] Information about living conditions contained herein is drawn from data collected for the U. S. Coal Commission and embodied for the most part in a formal report to the President and the Congress of the United States before the expiration of the Commission in September, 1923.

without, families—must live near their labors, whether such labors are near, or remote from, normal American community life.

As mining operations follow the coal seams into places remote from ordinary population centers, the operator must provide living quarters and community resources for the mine workers and the mine workers' families. Furthermore, the need for such provision does not arise or terminate abruptly, but increases with the distances and diminishes with accessibility to self-controlled communities.

So differently environed are the bituminous and anthracite mine workers that each group must be discussed by itself.

BITUMINOUS MINE WORKERS

URBAN AND RURAL DISTRIBUTION OF COAL MINE WORKERS

Nearly four fifths of the 585,000 men engaged in the bituminous coal mines are living in places classed as "rural," the meaning thereby being unincorporated communities having populations of less than 2,500.

COAL MINE OPERATIVES ENUMERATED IN 1920 BY THE UNITED STATES BUREAU OF THE CENSUS AND THE MINE WORKERS—OPERATIVES AND AUXILIARY LABOR—INCLUDED IN DATA COMPILED FOR THE UNITED STATES COAL COMMISSION FROM THE 1920 CENSUS POPULATION SHEETS[a]

STATE	COAL MINE OPERATIVES REPORTED BY UNITED STATES CENSUS 1920 (MALE)	NUMBER MINE WORKERS (MALE) INCLUDING AUXILIARY LABOR, INCORPORATED IN DATA COMPILED FOR THE COAL COMMISSION
Pennsylvania	[b]297,345	[a]306,968
West Virginia	87,728	92,357
Illinois	82,305	80,614
Ohio	47,789	47,830
Indiana	29,149	24,583
Alabama	26,204	12,979
Other states for which data were compiled for the Commission[c]	135,744	[c]107,277
States for which no data were compiled for the Commission	26,177	.....
Total United States	732,441 (Anthracite—147,456)[b] (Bituminous—584,985)[d]	672,608 (Anthracite—147,456)[b] (Bituminous—525,152)

[a] In this classification the Bureau of the Census does not include such auxiliary labor as carpenters, mechanics, stationary and mining engineers, etc., all of whom were included in the data on mine workers compiled for the Commission. This auxiliary labor is not listed separately in the published reports of the 1920 Census, but in the Occupation Census for 1910 (cf. Vol. IV, page 304) it constituted approximately 4 per cent of all the mine workers, though the per cents vary doubtless with varying types of mining operations throughout the several coal-producing states.

[b] The Bureau of the Census does not keep separate the anthracite and bituminous mine workers. The terms are not used on the Census schedules, but the locations of the anthracite and bituminous coal fields make plain the identity of each group of mine workers.

[c] Other states include Colorado, Iowa, Kansas, Kentucky (over 44,000), Maryland, Michigan, Missouri, Oklahoma, Tennessee, Virginia and Wyoming.

[d] Approximate figure only as it is derived by subtracting the anthracite mine workers—about 4 per cent of whom are auxiliary labor—from coal mine operatives which do not include such labor.

As might be expected, however, the proportions vary widely from state to state. Over nine tenths of the coal mine workers of West Virginia, where coal mining means pioneering, live outside of urban centers as compared with scarcely half in Illinois where many towns were born before coal mining operations were started. The figures disclose further that, while approximately half of the bituminous coal mine workers taken as a single group are housed in company-owned dwellings,[2] the proportions range from nearly four fifths in West Virginia to less than 9 per cent in Illinois; that the nearest towns for three fourths of the men housed in company dwellings were places of less than 2,500 population and that but 12 per cent were within five miles of incorporated towns and the institutions of civil liberty and community life which usually characterize such places.

The large proportions of coal mine workers living on company-owned properties remote from urban centers spell varying degrees of isolation and dependence upon coal companies for community resources as well as for the facilities essential to healthful, comfortable, and good citizen-making family life.

Since isolation puts a strain upon the ties that bind the individual and his family to the nation; and in addition, since sojourn in company-owned houses which are located in company-controlled communities arrests development of rooted interest in home and community, it becomes important to know just where in the scale of American citizenry the great body of this country's coal mine workers are to be found and what standards of living are revealed in the constituency and economic organization of their families. These questions were answered comprehensively and conclusively for the Commission by the data taken from the 1920 population sheets in the Bureau of the Census. And this is, in the main, the story they tell of the bituminous coal mine workers:

[2] Based on data collected direct by the Commission from bituminous coal companies employing 67.4 per cent of all the mine workers reported by all coal companies listed in the files of the Geological Survey.

MINE WORKING PERSONNEL

Two thirds of the men are between the ages of 20 and 45 years. Except in Alabama and West Virginia, where the relative numbers between 20 and 25 are markedly higher than in other states, the age groups do not differ materially. Nearly 60 per cent of the bituminous coal mine workers are native-born white men; another 8 per cent are native colored; and a third were born overseas, the largest numbers in Italy, Austria and Poland. These are the figures for the 585,000 men considered as a single industrial group, but such figures obliterate the striking differences in racial composition between the coal mine workers in the important bituminous coal-producing states. In Pennsylvania, for example, over 55 per cent of the men at work in the bituminous mines are foreign-born and an insignificant number are native colored. In Alabama less than 4 per cent are foreign-born and 53 per cent are native-colored. The native-born white men predominate, on the other hand, in the coal regions of West Virginia, Illinois, Ohio, Indiana and other central western states. In other words, the approximate 172,000 foreign-born bituminous coal mine workers are not so distributed among the other 413,000 as to insure a dominating influence to the native-born—a fact which grows in importance with the remoteness of mines and the consequent isolation of the

mine workers from normal, self-governing American cities.

CIVIC STATUS

Nearly 93 per cent of the 172,000 foreign-born coal mine workers had been in this country five years or more, but only 26 per cent had become American citizens in 1920. Another 17 per cent had taken out first papers, leaving more than half of all the foreign-born still alien. Here again, however, figures for the entire group fail to represent the civic status of the foreign-born men engaged in the coal mines of the several coal-producing states. In Illinois 42 per cent had been naturalized by 1920, 21 per cent had taken out first papers, and 31 per cent were alien, the civic status of the others not being known. In Pennsylvania, where more than half of all the foreign-born bituminous mine workers live, nearly 60 per cent were alien; 14 per cent had taken out first papers; and but 22.6 per cent were naturalized. In West Virginia, almost three fourths of the 18,500 foreign-born mine workers were still alien in 1920, though 90 per cent had been in this country five years or more. As only 9 per cent had taken out first papers, and the civic status of 6 per cent was unknown, there were but 1,833, or less than 10 per cent, who were American citizens in 1920.

Nearly 21 per cent of all foreign-born mine workers neither read nor write, and 12.7 per cent of those coming from non-English-speaking countries do not speak English.

These facts register the degree of responsiveness among the foreign-born to civic obligation as they reveal also the extent of rooted interest in, and sympathy with, American standards of living. The large number of illiterates also has an important bearing upon the hazards of the coal industry.

FAMILY RESPONSIBILITIES

Approximately 62 per cent of all the bituminous coal mine workers, whether native-white, native-colored, or foreign-born, maintain homes in the coal regions, and over 95 per cent of all those maintaining homes are, or have been, married men. About a fifth of the mine workers are boarding or lodging. These are chiefly single men, though there are among them a considerable number of married men whose wives are "not present." The other men—less than a fifth of the entire number and composed largely of single men—are living with parents. While these proportions differ substantially from state to state, the important fact remains that, in each of the important bituminous coal-producing states, from 59 per cent to more than 67 per cent of the mine workers are maintaining homes in the coal fields and as heads of families are sources of American citizenry whether the mine workers themselves are American citizens or not.

In 70 per cent of the homes of native and foreign-born mine workers in the bituminous coal fields, there are not to exceed five members in the family, including in the term, parents—or those standing in the place of parents—and children. In approximately 11 per cent of the homes are there eight or more members. The two largest single groups, constituting 35 per cent of all, have three and four members. These totals obscure the differences between the races in size of families, and as the racial composition differs widely from state to state the prevailing numbers in the families of mine workers vary correspondingly. A considerable number of the colored mine workers of the southern states are maintaining homes for themselves alone, and very few of them have eight or more members in

the family, 85 per cent having five or fewer. In nearly 76 per cent of the homes of the native-born white are there families of five members or under, whereas in 61 per cent of the homes of the foreign-born are the families limited to five members. In 15 per cent of the homes of the foreign-born there are eight or more members in the immediate family.

In nearly 70 per cent of the families of all the bituminous mine workers maintaining homes, the mine worker himself is the sole breadwinner. In the case of the native-born he is sole breadwinner in 73 per cent of the homes, as compared with 61 per cent in the case of the foreign-born. The families which have three or more breadwinners —*i.e.*, two or more besides the mine working head of the family—are but 8 per cent of the total number maintaining homes. The proportion of homes whose mine working fathers are sole breadwinners varies in the several states with the proportion of native-white, native-colored and foreign-born, the sole breadwinning mine workers forming relatively the largest groups where the native born predominate.

Unfortunately, shortage of funds prevented the United States Coal Commission from assembling other available data throwing light upon the organization and constituency of mine workers' households in the bituminous coal regions. It is not possible to say concerning the great body of bituminous workers, as it is concerning the men engaged in the anthracite mines, just how many have children of given ages at work, at home, or at school; how many have wives who are gainfully employed outside, or inside the home; in how many cases boarders or lodgers share the home facilities with the mine workers' families; and to what extent bituminous mine workers enjoy the security and permanence that attach to home ownership. But the data which the Coal Commission was able to present are ample to establish the fact that the mine workers as a whole are not detached men, without trammel of family responsibility and the claims for reasonable measure of healthful community life; that they are, on the other hand, in fairly close accord with prevailing national standards in the matter of size of families and of the obligation of the head of the household to serve as sole or chief breadwinner.

PHYSICAL ENVIRONMENT

In view of the large proportions of bituminous mine workers who are remote from independent self-governing communities, it is apparent that the facilities for family and group life available depend often upon the coal operator and reflect the standards which *he* sets up for the men—and for the wives and children of the men—who dig his coal. What sort of standards he sets up depends in turn upon the difficulty of attracting and holding labor and upon the shape and bulk which his obligations toward the men assume in his mind. Therefore, one would expect to find among operators a wide range in the idiosyncracies of social vision. One will not be disappointed.

WHAT THE SELF-GOVERNING COMMUNITIES OFFERED AS PATTERN TO OPERATORS

But a fairer judgment can be passed upon the extent to which bituminous coal operators are discharging their obligations to mine workers dependent upon coal companies for housing and community facilities, if some facts are available that will reveal the plane upon which bituminous coal mine workers can live in independent communities located in the soft coal re-

gions. For this purpose there were included in the Coal Commission's study of living conditions, 167 self-governing communities, ranging in population from less than 1,000 to over 50,000. In these towns live not far from 60,000 men engaged, according to the 1920 Census records, in the "extraction of minerals." As all the 167 towns are located in the bituminous coal fields most of the men so classified are bituminous coal mine workers. The entire number constitute approximately 27 per cent of all the gainfully employed men living in the same towns.

The Coal Commission's general summary of data bearing on the independent communities is in the main as follows:

1. Approximately 15 per cent of the 167 have piped water throughout the town or city, though 57 per cent have water-works systems in operation. While water-works systems in independent towns do not necessarily mean running water in the mine workers' homes, the systems are installed with special reference to the welfare of community members and running water service in the house is largely a matter of the occupant's ability to pay for, and his inclination to have, such convenience for himself and his family. Seven per cent of the 114 towns of less than 2,500 population had all houses served with piped water, though nearly 40 per cent had water-works systems in operation.

2. Over half of the 167 independent towns have sewer systems, though only 4 per cent of the communities are completely equipped with sewer mains. The report of the United States Public Health Service will reveal a low standard in the method of sewage disposal in communities of 1,000 or under.

3. Ninety-three per cent of the 167 independent communities, and 90 per cent of those having populations under 2,500, have public lighting systems.

4. One hundred and forty-seven of the 167 towns have resident physicians, the 20 without all being in the group of communities having fewer than 2,500 people. Hospitals are to be found in 44 communities, 8 of the smaller towns being so provided. In 31 communities the services of trained nurses are available. Dentists are practicing in 115 towns, 62 of which are in the less-than-2,500-population group.

5. Of the 140 towns from which definite data on the length of school term and the teaching force were secured, all have grade schools in session for between eight and nine months. The number of pupils per teacher was 44 in schools for white children, and 39 in schools for colored children. Seventy-eight of the 167 communities have high schools, and 20 others have combination grade and high schools. Thirty-one have public libraries, and 34 have reading rooms.

6. All but 7 communities have churches.

7. Except for towns of 10,000 population or more, recreation provisions in the great majority are confined to ball fields, pool rooms, moving picture shows, church clubs and fraternal societies. Twenty-eight communities have rest rooms, and in 38 there are public parks.

WHAT THE BITUMINOUS COAL OPERATORS PROVIDE FOR MINE WORKERS LIVING IN COMPANY-CONTROLLED COMMUNITIES

The Coal Commission's report on "Living Conditions Among Bituminous Coal Mine Workers" gives careful consideration to the difficulties of

natural location often confronting the operator who must provide housing for his men and the families of his men. The report also deals with the subject of "restricted life of the mine" in assembling data bearing on community resources, facilities and general upkeep in company-controlled towns. These matters cannot be discussed here, but the reader should bear in mind that they *are* factors in the conditions. On the other hand, a careful analysis of the Commission's report will disclose the fact that difficulties of natural location and restricted life of the mine did not always stand in the way of creating and maintaining satisfactory conditions for family and community life, or that such difficulties and restrictions were always, or even in the main, accountable for fatal defects in the equipment and material environment essential to health, comfort and content. The outline of the material conditions which environ the bituminous mine workers, and mine workers' families living on coal company properties may be traced in a few facts.

1. In the 713 company-controlled communities included in the United States Coal Commission's intensive field study, there were approximately 71,000 company-owned family dwellings, 95 per cent of which, as might be expected, were of wood. Four and five rooms constitute the prevailing mine worker's home on company-controlled properties, though one- and two-room shanties and six- or more-room houses exist in minority numbers. Over two thirds of the 71,000 family dwellings were finished on the outside with weather board, usually nailed directly to the frame with no sheathing other than paper (and sometimes not even that). Board and batten—the cheapest type of construction—formed the outside finish of over 25 per cent of the dwellings. The houses usually rest on post foundations with no cellars, though the double houses—particularly those in more vigorous climates—often rest on solid foundations and occasionally are provided with excavated cellars. Wood sheathing forms the inside finish of half the houses, and plaster finished the inside of another 38 per cent. Over two thirds of the roofs were of composition paper. The character of structural materials, of inside and outside finish, the type of roof and of foundation, are not the distinguishing features of "good and poor" company-controlled communities, as the diversity in these matters is not as great as the diversity in livability found throughout the coal regions.

2. Less than 3 per cent of the 71,000 company-owned dwellings, in which the bituminous coal mine workers lived, have bathtubs or showers. Three per cent have inside flush toilets. Less than 14 per cent of the 71,000 dwellings have running water inside, though nearly 61 per cent of the 713 company-controlled communities have water-works systems. Two thirds of the houses have electric or gas light.

3. Company provision for recreation and amusement in the majority of communities is so meagre as to be negligible.

4. The educational facilities, which, in law, are usually a matter of state rather than company responsibility, are not always provided alone by the state or county boards of education. Sometimes the provisions are made by the companies. In some cases the funds are derived from a special school tax deducted from the mine workers' wages. In some cases the company-controlled communities are so near to independent towns that where there

are adequate transportation facilities the schools of such towns are available to the children of mine workers who can afford the advantage.

5. Medical service is within reach of practically all of the company-controlled communities but with varying degrees of ease. One physician sometimes serves several communities, and is therefore unable to respond promptly to calls. Dental service is within practicable reach of a very small minority of the company-controlled communities. Hospital and trained nurse service, except in model communities, is not within convenient, or even reasonable, distance in view of the conditions of the roads and of the limited transportation facilities.

6. Churches or buildings available for churches are to be found in a majority of the company-controlled communities. Frequently the same structure serves more than one denomination. In some cases, the mine workers have raised the money for the erection of the church, the companies contributing to the funds.

While the above summary affords a general idea of the facilities and resources within company towns, as a whole it does not reveal the range and gradations of conditions in individual communities. To get this individualized picture of standards prevailing in company-controlled communities the Coal Commission staff used, in addition to the customary detailed schedules, a scoring schedule. This schedule was analogous to the one adopted by the United States Public Health Service, and was worked out in conference with the Public Health Service officials who made expert health and sanitation surveys for the Coal Commission in 64 company-controlled and 59 independent communities in the bituminous coal regions.

In the score card used for rating living conditions eight factors were considered: housing, water supply and distribution (with reference to all household and family requirements); sewage and waste disposal; community upkeep and layout (*i.e.*, the use made of any advantages offered by the "natural location" which was rated separately as natural location is not within the operator's control); food and merchandise supply; medical and health provisions; and provisions for recreation, for religious worship and for education. Each of these factors was subdivided and scored on the basis of 100 possible points, and then given a fixed weight in the total rating. The smallest possible margin was allowed to the opinion or impression of the agents as "points" stood for the existence of definite facilities or advantages described in the instructions. This method of scoring does much to correct an unconscious but common error of giving undue weight to fresh paint and general appearance at the expense of other factors equally or more important but not so obvious. As the Commission's report points out, it is not intended by this comment to "belittle the importance of paint and orderliness in the upkeep of premises. It is only to point out that the scoring method gives these factors due, but not undue, weight in a total rating." Finally it should be kept in mind that there are no lines of sharp demarcation between the good and bad communities, the good merging into the very good and best on the one side; and into the fair, poor and worst, on the other. Nor do the communities individually show the same level of excellencies or defects in all the matters that go to make up living conditions. Some have good houses, but poor water supply; others good roads, clean properties, but poorly built houses or inade-

quate methods of sewage disposal. All of these irregularities appear in the final scoring of the communities. Restricted space forbids further description of the scoring methods used and explained in detail in the Commission's formal report. Enough has been said, however, to lend significance to the outstanding fact disclosed by the method, *viz.*, that of 713 company-controlled communities, 66, or 9 per cent, scored 75 points or more in general community conditions for which the operators are morally, if not legally, responsible; 82, or 11 per cent, scored under 50 points, and 80 per cent fell between these two ratings.

TERMS UPON WHICH MINE WORKERS LIVE IN COMPANY-OWNED HOUSES

It is obvious that when the normal labor supply of city or town is out of the operator's reach, his housing facilities become such an indispensable factor in securing labor, that tenure of company houses by mine workers must be closely coincident with employment in the company mine.

This fact should be kept in mind, when passing judgment upon the conditions under which company-owned houses are occupied by mine workers and their families. These conditions can be stated substantially in the words used in the Commission's report on the subject. The rentals are lower for company-owned than for non-company-owned houses. The occupant of the company-owned house gets his fuel and frequently his light at a markedly lower cost than do other wage earners. Usually he pays nothing for water, even though it is piped to his premises. Medical service for himself and his family is available at small cost when compared with the expense of such service under ordinary circumstances. No accurate measurement of the value of these comparative advantages can be made, however, unless there be taken into consideration also the comparative terms under which a mine worker lives in a company-owned and non-company-owned house. However obvious and urgent is the coal company's need to keep its houses for its labor, it does not obscure nor lessen the importance of the status of the mine worker occupying a company house as compared with his status when renting a house under the ordinary tenancy laws which in every state afford him and his family security of tenure, days of grace before eviction even for proven breach of contract; and which insure to him an American citizen's dominion over his own premise during legal tenure thereof.

There are submitted in the Appendix to the Commission's report copies of mine workers' house leases used by coal companies in West Virginia, Pennsylvania and Ohio. Though they differ in phraseology, they do not differ materially from one another in provisions except that some are a little more explicit as to company's rights, and others more general in abrogating the claims of ordinary tenancy. These documents show that:

1. The lease may be terminated by either party on a few days—usually five—by either party. It terminates automatically whenever the mine worker ceases, *from any cause whatsoever*, to work for the coal company.

2. The company legally may put the mine worker and family out of the house at the termination of the lease without prejudicing claim for any rental arrears and without incurring liability for damage resulting to mine workers' belongings through eviction.

3. The company may pay itself out of mine workers' wages for rent due, also for damages done to prop-

erty. The company may also, according to some leases, withhold all unpaid wages at the termination of a lease, until premises are surrendered. According to others, the company may retain permanently $2 for each day the premises are occupied by the mine worker or his family after the termination of the lease.

4. The company reserves the right to enter and inspect the premises at any time and to make and enforce rules and regulations affecting the streets or roads upon which the premises abut.

5. The mine worker according to some leases must not entertain or harbor upon the premises persons objectionable to the company. Some leases stipulate that neither lodgers nor boarders can be taken into the mine worker's family without the operator's consent, unless such boarders or lodgers work for the company. Other leases provide that the mine worker's rights in the premises are only those of ingress and egress for himself and the members of his immediate family. Some stipulate that the lease does not create the relation of landlord and tenant and commit the tenant to a waiver of the protection of all laws covering tenant's rights.

Quite aside from the moral right or wrong of these provisions and quite apart from the question as to whether the provisions were inserted in the interest of law and order or to ensure a more effective control of labor supply, the legal insecurity of house tenure, and the marked limitations upon dominion of premises during tenure are factors which cannot be ignored when comparing values received for rentals paid for company-owned and for non-company-owned houses. The insecurity of tenure is a particularly important factor in view of the provisions that when a mine worker loses or gives up his job "for any cause whatsoever" he loses the right to occupy his house from the day he ceases to work. A sudden altercation with the mine boss may end in discharge and simultaneous loss of house. Some operators contend that "these provisions" are "mere forms" and of no importance. The contention is in conflict with the declarations as to the need of inserting the provisions. However, no statement of fact concerning these company leases is complete that does not make clear these facts, *viz.*: that none of the agents engaged in this investigation reported the eviction of a man who ceased to work because of illness; that it was usual not only to let the mine worker remain in the house during slack work but that frequently the rent was allowed to run until better earnings permitted the mine worker to catch up with expenses, and in some cases the rent for such periods was never collected; and that families whose men had been killed in the mines were sometimes allowed to live on indefinitely in the company houses. This policy did not apply to cessation of work for other causes, such as voluntary withdrawal or discharge. Furthermore, whatever the company does in times of sickness or other misfortune is a measure of mercy or of benevolent tolerance granted to the mine worker. It is not a right which the mine worker can claim for himself and his family under any tenancy laws of the state.

It should not be overlooked that in this insecurity of tenure the wife and children of the mine worker are equally if not more affected than he. The knowledge that the two precious eggs —the job and the family shelter—are in one basket and that any hour of the day the husband may come back with both broken, is a constant and grim companion whose menace to herself and her

children the mine worker's wife is powerless to forestall. Whether or not the companies have gone further than is necessary to reserve the houses for mine labor, it is in the interest of public welfare as well as justice to the mine worker and especially to the mine worker's wife, that the terms of occupancy of company houses should be made known to both mine worker and mine worker's wife before the family is moved for any considerable distance, if there are no other than company-owned houses to be had. The large number of foreign-born who neither read nor write English, and many of whom do not speak our language, as well as the number of native-born illiterates, render such provision doubly important.

THE ANTHRACITE MINE WORKERS

How differently environed are the anthracite mine workers of Pennsylvania is easily understood from only a few conspicuous facts contained in the Coal Commission's report.

Of the more than 730,000 men at work in the country's soft and hard coal mines, about 147,500 are living in the small compactly located anthracite coal fields of Pennsylvania, where independent communities, large and small, lie like a string of beads between the ranges of the Alleghenies, around the foothills and along the streams. Steam and electric railways, good roads, inter-urban telephone connections, creating and maintaining constant intercourse, are the cords which bind these communities into permanent contact. It is not surprising to find, then, that 70 per cent of the anthracite mine workers live in incorporated towns of 2,500 population or over; that the great majority of the others are in unincorporated but independent communities of 500 to 2,500 people; that more than 90 per cent of the men live in houses not owned by the coal companies; that nearly nine tenths of the small proportion who do live in company-owned dwellings are in houses that are either located within the limits of incorporated towns, or are not as much as five miles therefrom; and that the company-owned houses do not constitute 5 per cent of the family dwellings in the communities in which such company-owned houses are located.

Obviously, whatever the conditions of living, however ample or meagre the facilities for healthful and comfortable family and community life, neither isolation from normal independent communities nor dependency upon company housing can be regarded as a factor in the results.

The anthracite mine workers and their households, numbering nearly half a million persons, constitute over 48 per cent of the population of the counties in which the principal hard coal fields lie. Barring Scranton and Wilkes-Barre, the anthracite mine workers themselves are 45 per cent of all the wage earners living in the same communities. With these other wage earners and their families, therefore, the anthracite mine workers and their households bear equal responsibility for the conditions of life in the self-governing communities. It is true that the coal companies, through the great wealth they control, acquire a greater influence, and consequently a greater obligation to maintain exemplary conditions on the housing properties and in the communities they do control. It is equally plain from the data collected by the United States Coal Commission that, while some companies are fulfilling this obligation, the majority are trailing, rather than leading, progress toward better homes and better communities, and that some of the conditions stamp the sponsors as nurturing social malignancies. But

the company-owned houses, and company-controlled communities are too few in number to fix the level of conditions in the independent communities that abound in the anthracite region.

Exhaustion of allotted space prevents any discussion of standards of living except such as are reflected in a few outstanding facts concerning the composition and characteristics of the anthracite mine working population.

CIVIC STATUS

Of the 147,500 anthracite workers, 78,000, or about 53 per cent, are foreign-born, 42,000 coming from Russia and Poland. Almost 97 per cent of the foreign-born had been in this country five years or more in 1920. Over 29 per cent neither read nor write, and 14 per cent of those coming from non-English-speaking countries do not speak English—two facts that are factors of patent importance in the problem of national assimilation and of industrial hazard. More than 34,000, or 44 per cent, of the foreign-born were still alien in 1920. Not as many as a thousand of these were under 18 years of age, the age at which first papers can be taken. An additional 10,500 of the foreign-born had taken out first papers only, so that less than half of all the anthracite mine workers born overseas were American citizens in 1920.

FAMILY RESPONSIBILITIES

Over 68 per cent of the foreign-born and 44 per cent of the native-born anthracite mine workers are maintaining homes in the anthracite region. About a third of the foreign-born own, in part or in whole, the houses in which they live as compared with less than 29 per cent of the native-born.

Of the foreign-born mine workers maintaining homes and having children of school age, two thirds have children of such ages at school. In the homes of all foreign-born anthracite mine workers there are approximately 200,000 children.

In 60 per cent of the homes of all the anthracite mine workers there are families of five members or fewer, counting only parents (or those standing in the place of parents) and the children. As might be expected, the families of the foreign-born are frequently larger than those of the native-born, over 47 per cent of the former, as compared with 27 per cent of the latter, having six or more members in the immediate family.

Over half of all the anthracite mine workers—62 per cent of the native-born and 51 per cent of the foreign-born—are the sole breadwinners of the family. About a fifth of all are taking boarders or lodgers—23 per cent of the foreign-born and 16 per cent of the native-born.

Less than one half of one per cent of either foreign-born or native-born anthracite mine workers have wives who are gainfully employed outside of the home. Over a third have the help of children 14 years of age or over.

Manifestly the anthracite mine workers, like the men at work in the bituminous fields, are normally circumstanced in the matter of family responsibilities. But the material environment of the anthracite mine workers is, as stated, a matter of civic progress and economic status rather than a question of the operator's standards of the conditions which should surround the men—and the families of the men—who must live in his houses while working in the mines.

Needless Hazards in the Coal Industry

By John B. Andrews
Secretary, American Association for Labor Legislation

WE will probably all agree that the way to get the best results in any industry is to face the facts and then make use of them.

In the United States we are killing coal miners three times as fast as they kill them in Great Britain.

It happens that for 1919, 1920 and 1921, the latest years for which comparable statistics are available, our fatality rate per thousand coal miners employed has been a little more than three times as great as their fatality rate in the United Kingdom. Voluminous government reports from Washington have long been saying this in their tabular statements.

Fatality Rate Per 1,000 Workers

Year	United Kingdom	United States
1919.....	.94	3.03
1920.....	.88	2.92
1921 *	.66	2.42

* In both countries during 1921 the mines were closed for a considerable period.

Moreover, one may point out, as did a leading statistician before the National Safety Council last month, that "More disturbing than the appallingly greater fatality rate is the fact that the relative fatality rates, though fluctuating rather widely, show on the whole a decided increase."[1]

But in the United States the coal seams are in general much thicker and more accessible and we employ more and larger machinery. Naturally our output per man employed is greater. This has suggested to the apologists for our shameful fatality record that we should measure our fatality rate by output in tons rather than by the number of human beings killed per thousand of full time workers. I am glad to note that the Secretary of the Pennsylvania Department of Labor and Industry—a statistician of international reputation—has branded this suggestion "to measure deaths and disabilities of workers on a tonnage basis" as "utterly erroneous and bad statistics."[2] Dr. Meeker properly adds:

> The only just and accurate basis of reference is the man hours worked, during which time the workers were exposed to the hazards of industrial accidents. . . . The lower fatality rate per thousand tons is due to the fact that human lives are sacrificed to the God of Big Output.

But despite the unfairness of the tonnage basis, it may be interesting to note that, while the average "five-year fatality rates" for the United States and Great Britain is as 4.08 to 1.13 per thousand employes, the comparative fatalities per million tons of coal produced is on the scale of 100 for the United States to 116 for Great Britain.[3]

Turning to the hazards in the *bituminous* coal industry of the United States, we find the fatality rate still higher than for the coal industry as a whole. During the ten years to 1922, the United States Bureau of Mines

[1] Royal Meeker, Secretary, Pennsylvania Department of Labor and Industry.

[2] Royal Meeker, "International Aspects of the Safety Problem," paper read before the National Safety Council, 1923.

[3] Report of Committee on Safety in Bituminous Coal Mining, U. S. Coal Commission.

reports that at the bituminous coal mines alone there were killed 18,243 miners, the average fatality rate being 4.30 per 1,000 employed.

Of the average of 1,824 bituminous coal miners killed each year, about one half meet their death from falls of roof and coal, about 18 per cent are killed by mine cars and locomotives, about 12 per cent by gas and coal dust explosions, and the remaining one fifth lose their lives from other causes.

"No general statistics are available on non-fatal injuries in the bituminous coal industry, because there is no uniformity among the states in reporting such accidents." [4] This "daily sniping" of miners underground is not yet counted for the whole country.

But from compensation insurance experience in Pennsylvania it is estimated that the bituminous coal industry in that state alone loses approximately 1,165,900 days' service yearly on account of about 28,800 serious non-fatal accidents, which result in a compensation cost of approximately $1,497,000 annually.[5] There is also to be considered the property and production loss running into millions.

This is a record of striving for large output with less consideration for safety than for both high dividends and high wages. Officially it is a record of decentralized administration—of protective state regulations that differ almost as much in character as does the degree of their enforcement from state to state. It is a record at best of tardy adoption of safeguards—lagging years behind engineering knowledge of what can and ought to be done. It is a record of appalling and needless loss of property as well as human lives, which have been sacrificed to speed, greed and indifference to the public interest.

As pointed out by occasional writers on this subject, the loss of 150 lives at one mine disaster and 250 at another, as we read of them in the papers, "are mere figures to us, they have no human meaning. But if we could stand at the mouth of the mine upon its reopening after an explosion and behold the seemingly endless column of charred bodies borne hour after hour to the surface; if we could witness the long line of hearses on their way to the hillside burial ground; if we could hear the heartbreaking sobs of stricken widows mingled with the pitiful wails of little children bereft of their fathers; if we could go in the days that follow to the bare homes deprived of their breadwinners," [6] we would then perhaps begin to appreciate the loss.

The United States Bureau of Mines, says a recent authoritative report,[7]

> has demonstrated clearly how to avoid explosions, how to use explosives, what lamps are safe, how to install and use electrical equipment, when to declare a mine gaseous and how to reduce accidents from falls of roof and from transportation.

I believe it is a reasonable statement that two thirds of the fatal and serious accidents at the bituminous coal mines of this country could be prevented by the universal adoption of safety methods already in successful operation at some of the mines of this country or in Great Britain. As a result of practical experience during fifteen years, and through our own recent studies of this subject in Europe and America, our Association has gradually drawn up, from the public point of view, a program for prevention. This has been

[4] Report of Committee on Safety in Bituminous Coal Mining.

[5] Deduction from Report of Committee on Safety in Bituminous Coal Mining.

[6] John Randolph Haynes, M.D., in U. S. Senate Document No. 265, 62d Congress, 2d Session, p. 11.

[7] Safety in Bituminous Coal Mining.

done after consultation with mine operators and engineers, representatives of the miners' organizations, state and Federal mine inspectors, in addition to a careful study of published reports.

The reports of the United States Bureau of Mines, since its organization in 1910, have dwelt year after year upon needless hazards in the coal industry. Now we have received from a committee that is representative of coal mine operators, coal miners, casualty insurance interests, mining engineers, mine inspectors and statisticians, a new and informing report prepared under the chairmanship of the well-known engineer, E. A. Holbrook, Dean of the Mining School, Pennsylvania State College. Let us consider briefly the findings of this representative committee of practical men submitted recently to the United States Coal Commission.

This new report strikingly reinforces earlier evidence upon which our Association for Labor Legislation recommendations are based. It will economize time and unify the statement if our constructive program and the findings of this latest official report are discussed together. Our first proposal is:

I. *The adoption of uniform legal minimum standards of safety.*

Beginning with Ohio in 1874, most of the coal mining states have adopted mining codes, the most comprehensive, perhaps, being that of Pennsylvania. These codes—while differing widely in scope and effectiveness—include such provisions as were at the time of their adoption regarded as a step in advance or the best that could then be passed through the state legislatures. Minimum requirements as to exits, ventilation, proper timbering, safety lamps, electric wiring and blasting regulations, are typical features of these state codes. Many of these laws now need thorough revision to bring them into line with modern engineering knowledge and the best mining and administrative practice. At least one coal mining state has no protective legislation. Our Association has noted a growing sentiment that unless state regulations are generally and rapidly improved, the suggestion is to be expected that operations in this industry which are regarded as in the nature of a public service should be subjected to some form of Federal control.

It is scarcely necessary to repeat here what is again tersely stated[8]—that "the non-conformity among states in their mining laws is a handicap to safety and a disturbing economical element in competing fields in adjoining states." The mine safety committee asks, "How can a safety law, costing, say, five cents a ton, be enforced in one state, when the competing mines of a neighboring state have no similar law?" A fair question. Too much emphasis has sometimes been put on the interstate competition argument in protective legislation, but there is a real problem here that calls for uniformity of minimum legal standards.

It is of course recognized by the safety committee that "accidents from falls of roof and from transportation are due to many different causes, each of which generally needs careful local study." And of course "every company should foster first aid, provide a safety inspector, and provide instruction in safety." On the other hand, "the expense of a complete approval system for gassy and dusty mines is large, too large for the individual states to carry out. Nation-wide uniformity," declares the committee, "is desirable." And the need of some additional authority is plainly apparent in view of the fact that "in 1922, only 18.2

[8] Report of Committee on Safety in Bituminous Coal Mining.

per cent of the explosives used in coal mining were permissibles."

It is the belief of the practical experts who have just reported on this subject, that the various recommended safeguards will gradually be adopted by the industry, but they say "under present conditions it should be remembered that neither operators nor miners like to change customs and appliances with which they are familiar."

"While many of us oppose so-called government paternalism," concludes the safety committee, "yet we believe it is the duty of the Government to secure safety of life by wisely directed legislation. If the compulsion by the Government to use life-saving devices, as the air-brake and automatic coupler on our railroads, is proper, we believe the coal industry should prepare (especially in new operations) to universally adopt these safety suggestions."

The second proposal is:

II. *The use underground of no explosive that is not after scientific investigation numbered among the "permissibles;" the prohibition of "shooting off the solid;" and the use of shale or approved rock dust to check the spread of coal dust explosions.*

In general it is a sound principle to encourage the greatest possible local and representative committee study and formulation of safety standards. Our Association has consistently recognized this. But it sometimes happens that necessary technical scientific research has reached positive conclusions supported by practical experience, at the same time that there is urgent call for efficient and direct application of measures to save human life. Such an example is found in the remedy for coal mine explosions.

I was shocked during a visit this year to middle-western states to learn how extensively black powder is still being used. Reference has already been made to the fact that despite the painstaking scientific work of the Federal Government only about 18 per cent of the explosives used last year were permissibles. Does this condition not call for something more than the purely voluntary acceptance of safety precautions by isolated coal operators? Obviously, black powder should be abolished, and permissible substitutes adopted as is recommended by the coal safety committee. Moreover, the use of large quantites of powder, without undercutting the coal, should be discouraged.

Another important related problem is the extension throughout the mine of explosions due to the throwing into suspension and the rapid ignition of coal dust. The remedy is to provide quantities of shale dust the particles of which come between the floating particles of coal dust and arrest the process of ignition and explosion. Of the Federal Bureau of Mines' splendid research work of a dozen years at a cost to our taxpayers of millions of dollars, "the outstanding accomplishment is the practical demonstrations of the cause and nature of coal dust explosions and the development of methods for their limitation and control by use of rock and shale dust." "The cause and nature of coal dust explosions has been sold to the industry," says the coal safety committee, but "an equal work remains of getting the industry to adopt the best methods for their prevention."

There are not, to my knowledge, more than three substantial coal companies in America that are using this simple, reasonably inexpensive and effective safeguard. While making some inquiries in Europe I learned that at least France and England compel the use of shale or rock dust by national law. And in talking recently with the chief of the British Depart-

ment of Mines I found that, before the adoption of official regulations on the subject, British employers were not unlike the vast majority of our own coal mine operators. At first they would not believe coal dust is explosive. When it was conclusively demonstrated in experimental mines, they then said, "Well, the coal dust in *my* mine is not explosive!" And when the explosibility of this, too, had been proven, they fell back upon the objection to the *cost* of adopting so simple a measure.

Says the committee on mine safety, "It has been clearly demonstrated" that "gas and coal dust explosions can be limited and controlled by the intelligent use of rock and shale dust." Some coal mines in this country are doing it. And yet, fifteen times during the past twenty-two months, the first pages of our newspapers have carried the grim story of the most recent fatal explosion. I submit that if it is necessary to have compulsory legislation in this country, it cannot come too soon.

As Director Bain of the United States Bureau of Mines has publicly stated:

> The great explosions should not be considered to be normal occupational accidents. . . . Investigations carried on by the Bureau of Mines for more than ten years have demonstrated beyond question of doubt that such spreading of explosions by coal dust can be prevented. Responsibility for this rests upon the mine managements. . . . Explosions can and must be prevented.[9]

Our third proposal is:

III. *Reward careful employers and penalize the less scrupulous, by the universal adoption of schedule rating for insurance under accident compensation laws, with a further graduated penalty for cases of wilful failure to put into effect legal safety regulations.*

[9] *American Labor Legislation Review*, March, 1923, p. 38.

Already schedule rating has demonstrated its value in inducing the employer to reduce hazards as a method of reducing his insurance premium. The Association for Labor Legislation has long been impressed with this development in workmen's accident insurance, and the safety committee likewise notes its bearing upon mine safety. By this means, says the committee, "the direct cost of a mine with low safety standards is brought home to the operator. The system has proven a real safety incentive."

In at least one mining state (California), also, there is a special penalty provided of from 15 to 50 per cent additional compensation to the injured worker where it is clear that the employer was guilty of serious or wilful misconduct. The same penalty works inversely upon the injured workman in case he has offended. In several states, with reference to certain other labor law violations, a double or even triple compensation penalty is assessed directly upon the offending employer.[10]

Familiarity with danger has always bred contempt for it among workers in extra-hazardous occupations, and the coal miners need to feel their increasing responsibility to exercise every practicable safety precaution. But it is nonsense to say—as one editor does and as certain propagandists would have the public believe—that "the coal miner of this generation is in danger only through carelessness, his own or that of a fellow worker." We find refutation of such an assertion right at hand in the most recent mine disaster—that at the Glen Rogers Coal Mine in West Virginia, November 6, where 27 miners were killed in an explosion. It has been determined that the tragedy was caused by a spark from

[10] See article by E. E. Witte, "Treble Compensation for Injured Children," in *American Labor Legislation Review*, June, 1923.

the commutator brushes of a drill. "Disregard of the vital requirements of the mining law on the part of the company's representative, in allowing the use of dangerous electric drills not approved by the Mining Department," was the finding of the coroner's jury.

The experts of the Coal Commission stress the importance of official inspection in influencing operating methods and working conditions. They state that those interviewed in many states believed that an increase in compensation benefits would result in a marked decrease in accidents, and they conclude that mining laws and compensation laws are the two great direct factors for mine safety.

The fourth proposal is for:

IV. *An adequate mine inspection staff selected upon a merit basis of training and experience, fairly paid for reasonably long tenure of office, and protected from partisan interference whether political or industrial.*

This proposal is in harmony with the best practical experience in factory safety as well as in accident prevention in mines. Its importance deserves elaboration, but its merits are well understood, and there is time here only to refer to the fact that the coal safety committee also recommends it.

"For the country in general coal mining would today be a better and safer industry," the experts say in their report, "were inspectors in every state chosen through strict examination in principles and practice of mining, at a salary sufficient to hold high-grade men, and freed from any influence save those listed in the laws and that of their superior officer, and expectant of holding office until retired by natural causes." [11]

[11] "Natural causes" here does not necessarily refer to mine accidents, but it is a disgraceful fact that several states have persistently refused the protection of workmen's compensation to coal mine inspectors.

Because much of the work is independent of state boundaries and constitutes a national problem, it can best be undertaken under national auspices.

"The (Federal) Bureau of Mines, through its investigations, discoveries and recommendations," the investigators find, "has become the authority and leaven for mine safety work in this country."

More than a quarter of a million dollars has been spent in developing and equipping, near Pittsburgh, an experimental mine where practical work on underground safety can be carried out by the Federal Bureau.

"It shall be the province and duty of said Bureau," decreed Congress in establishing it, "to make diligent investigation of the methods of mining especially in relation to the safety of mines and the appliances best adapted to prevent accidents."

But Congress stopped there without giving the Bureau the necessary authority.

"The suggestion has been made," now reports the safety committee, "that the engineers and officials of the Bureau of Mines should have the right of entry to a mine, for the purpose of investigating mine accidents, and that their reports should be made public or delivered to the operator through the State Department of Mines. At present the Bureau enters a mine on permission of the operator.

"The new thought is that an independent report on accident or disaster, by an agency not affected locally, would be beneficial to operators and to miners, and of service to the Mining Department of the State." But "There is not agreement in our coal safety committee," it is stated, "on this point. At least it would be valuable could the Federal Bureau coöperate with the State Mining Departments, by furnishing them confidential copies

of reports on conditions investigated within their police jurisdiction."

Despite splendid work by this Federal investigation Bureau, and by a few of the state bureaus, there is still "little coördination in methods and technique of investigation and inspection of mines for safety." It is believed, therefore, that to a national agency should be given authority to improve and make more uniform the character and technique of mine inspection "and the improvement and adoption of more uniform safety standards underground." It is interesting to note that our Federal experts already have up-to-date operating regulations in effect for the eighty coal mines owned by the United States Government.

Anyone familiar with the progress toward centralization in the administration of mine safety measures in recent years in other countries will, upon comparing their results with the American mine accident record, understand the growth of this sentiment.

Finally, we submit as the fifth proposal:

V. *Greater public authority, Federal and state, to procure and disseminate information, and to establish and maintain on a uniform basis reasonable minimum standards of safety.*

In 1911, Dr. John Randolph Haynes, following his inquiry into coal mine safety in America and abroad, addressed the annual meeting of the American Association for Labor Legislation on this subject. With eloquence and conviction he pictured the needless hazards in American mines.[12] "Experience has shown at frightful cost," he then said, "that these things cannot be left to the volition of the operator or the miner or to the regulation of the individual states." He then urged that a Federal enforcing agency, with powers like that of the Interstate Commerce Commission, be set up. "Shall we go on in this country," he asked, "clinging to our inefficient system of state regulation of an industry that is essentially interstate in character until we have uselessly sacrificed the lives of tens of thousands more poor miners, before we stop this slaughter under the only practical system of safety—the Federal regulation of the mines?"

Twelve years later we can give part of the answer. We are still counting the dead.

"If we really want to prevent this needless loss of human life the lawyers will find a way for us to act nationally," said Dr. Haynes in 1911.

Now comes, in 1923, a conservative Federal commission which—after spending three quarters of a million dollars looking into the coal situation—notes that "coal is not primarily a commodity;" "it is a service;" "the production and transportation of coal constitute a single service;" "coal is clothed with a public interest." And there follows logically a general proposal by this Federal commission for the creation of a Coal Division in the Interstate Commerce Commission.

There is still difference of opinion among lawyers as to the possibility of securing effective results through Federal action without a Federal constitutional amendment. But by whatever additional public authority a national minimum of safety is finally assured, there will, of course, be not less but greater opportunity for the mine departments of our individual states to function effectively in the great work they have to do. Authoritative Federal and state coöperation, with the continuous encouragement and assistance of employers, miners and engineers, is urgently needed.

Failure to right the wrong of un-

[12] See *American Labor Legislation Review*, II, No. 1, pp. 140–52.

diminished accidents in the mining of coal is in utter disregard of promises made since the Armistice by leading representatives of industry, that business would meet public expectations by voluntarily abandoning anti-social policies if it were kept free from "legislative interference." Many who have waited long years for the majority of the managers of the coal industry to set their own house in order now see the futility of waiting longer upon their voluntary action. There is coming an informed and insistent public opinion that cannot be ignored.

Every day that heedless coal mine managements delay the removal of needless accident hazards in their industry strengthens the argument for the adoption of uniform regulation. Moreover, some conscientious employers have made progress in mine accident prevention, and it is only reasonable and fair that they be protected from the undercutting of any competitors who have been less humane, less responsive or less scrupulous. Voluntary effort is to be hailed with special enthusiasm, but it is only with the cooperation of supporting legislation backed up by public opinion that within a reasonable time these needless industrial hazards can be universally and permanently abolished in our country.

Bituminous Wages from the Point of View of an Operator

By John H. Libby
Economist, Bituminous Operators' Special Committee

THE average price per ton of bituminous coal at the mine is 97 per cent above the average price per ton in 1913, and consumers of coal are persistently, and often indignantly, asking why this should be so. The prices of other commodities have declined since the period of inflation, following the close of the war, until the index of the cost of living issued by the Bureau of Labor Statistics now stands at 69.6 per cent above the 1913 level.

Cost of Labor Responsible for High Coal Price

Why, then, do coal prices not follow the general trend? The materials and supplies necessary for the upkeep of the mines are not unduly high as compared to the prices of other commodities. Certainly the cost of management has not unduly increased. Profits are not greater, for from nearly every coal district in the United States the operators are crying that their mines are being operated at a loss, and a careful examination of the mine cost sheets would undoubtedly bear them out in their contention.

It is the cost of labor alone that is chiefly responsible for high coal prices. The element of labor cost is the most important single element in the cost of production of bituminous coal, and this item represents approximately 68 per cent of the total cost of mining. And it is noteworthy that, in the production of at least three fifths of the total output of the coal produced in the country each year, this most important element of cost is one over which the operator has but little control. For the cost of labor is not fixed in the office of the mine superintendent, but in the conferences with the United Mine Workers of America, or, as occasionally happens, in the office of a politician who hopes to gain their support at the public expense.

The United Mine Workers of America absolutely control the labor engaged in the production of over 60 per cent of the bituminous coal mined in the country, and, by their reckless and irresponsible use of the threat of a nation-wide strike, have been successful in forcing upon the operators in the fields which contract with them a wage scale which probably has no parallel in the history of unskilled labor.

Labor Unskilled

Before going into the details of wages, let us first examine the character of the labor in the bituminous mines. The largest class of men consist of loaders, who load coal shot down from the face into the mine cars. These men require no training to perform their work. The drivers, trackmen, tipplemen, and, in fact the vast majority of all the employes in and about a coal mine, need no previous experience or apprenticeship to enable them to perform their duties satisfactorily. Even those men who run the cutting machines can be trained to handle the machines in a few days, or, at most, a few weeks, and only by a stretch of the imagination could they be classed as anything but unskilled labor. Hoisting engineers, electricians and a few others, are, of course, skilled workmen, to whom these remarks cannot be applied. But there is no doubt that the process of getting coal out of the

mine is performed by labor which is purely unskilled.

In the union fields, day labor is paid at the base rate of $7.50 per day of eight hours. The tonnage men, or piece workers, are paid an amount per ton which will enable the average worker to earn a like amount in the same working period without overtaxing his energies. This rate varies somewhat from field to field, but averages about $1.26 per ton for loaders. Machine runners are also paid according to the amount of coal cut, and their rates average, in most states, about 30 cents per ton less than the loaders' rate. In many instances, however, the United Mine Workers have been able to compel the operators to pay a rate which more closely approaches the pick-mining rate, which, of course, tends to discourage the operators in those fields from installing additional machines, as the machine will save little in the cost of production.

WAGE RATES

How do these rates of pay compare with those of similar classes of labor in other industries? The coal operator has no desire to let the wages of his miners lag behind those paid to labor of the same character in other industries. The United States Steel Corporation is now paying its unskilled laborers at the rate of $3.60 per day. The rates paid by the railroads to section men and other unskilled workers average about the same. The man in the street, when asked to name the highest paid laborer of whom he has knowledge, will undoubtedly give as his answer the building trades laborer, but the highest paid building trades laborer in any city of the United States was paid at the rate of only $4.63 a day, as shown by the Bureau of Labor Statistics' compilation of union wage scales for 1923.

But rates of wages, while they constitute to the operator the measure of labor cost in the production of each ton of coal, do not necessarily indicate the economic status of the wage earner. This status of the workman can only be ascertained by a study of his money earnings and a study of the relation of these money earnings and of other pertinent factors to the level of the cost of living. Enlightened employers desire that this status shall at least be high enough to enable the wage earner to live in reasonable comfort and to keep his mind free from the worry of being unable to provide a decent livelihood for his family.

COMPENSATION OF MINERS IN BITUMINOUS INDUSTRY

The position of the majority of wage earners in the bituminous industry is probably more favorable than that of unskilled laborers in other industries. It is also true that the economic position of the bituminous coal miner cannot be measured in terms of his earnings alone. Before turning to the question of what these earnings are, let us pause for a moment to look at some of the other compensations of the bituminous mines.

When he works for a company whose mines are situated so far from the nearest town or city that it is obliged to maintain one of the much maligned company towns, the miner is furnished with a house, which he gets for a rental far below the cheapest rental paid by workers who inhabit tenements in the cities. These rentals average about $2 per month per room. In practically all of the newer company-owned communities, houses are equipped with electric light, and many are equipped with bathrooms and running water. The company furnishes the miner his fuel for a nominal sum, usually at a flat rate which will average about 75 cents

per month, regardless of the amount of fuel consumed. Electric current, where this is supplied, is also charged for on the basis of a flat rate, usually from $1 to $1.50 per month, and the employes are encouraged to buy and to use electric cooking and other household devices which they can purchase through the company at cost, and for the use of which no extra charge is made for current. His water is also furnished at a nominal cost. In addition to these advantages, many companies furnish amusement centers, and are active in organizing social life among the miners and their families. The company does these things usually not because of any desire to uplift humanity, but because it regards it as sound business policy to keep its employes contented and thus help to eliminate the very disturbing and uneconomic labor turnover. Nevertheless, it is necessary to consider these factors in any consideration of earnings.

COMPARISON OF MINERS' AVERAGE EARNINGS WITH OTHER UNSKILLED LABOR

The Department of Mines of the State of Ohio collects statistics of the wages of miners in that state. These figures show that the average daily earnings of all classes of bituminous coal miners in that state in 1922 were $8.83. In the studies carried on by the Bituminous Operators' Special Committee during the last eight months, these earnings were compared with the earnings of men in other industries. Average daily earnings of miners were compared with those of 17 classes of unskilled labor published by the Bureau of Labor Statistics, and the Interstate Commerce Commission. This comparison showed that the highest average daily earnings of those classes of unskilled labor reported in Government publications were those of laborers in boot and shoe manufacturing, whose earnings averaged $3.73 per day. This represents only 42 per cent of the $8.83 average daily earnings of bituminous miners in the state of Ohio.

A similar comparison was made by the Bituminous Operators' Special Committee between the average daily earnings of bituminous miners and those of unskilled labor in 23 manufacturing industries as reported by the National Industrial Conference Board. In 1914, the average daily earnings of unskilled laborers in 23 manufacturing industries were $1.79, compared with $3.13 for bituminous coal miners. No report was made by the National Industrial Conference Board on earnings of unskilled labor in manufacturing industries from 1915 to 1919. In 1920, the average daily earnings of unskilled labor were $4.26. In the same year the average daily earnings of bituminous coal miners were $7.66. In 1921, the average daily earnings of unskilled labor in manufacturing industries dropped to $3.19, but rose again in 1922 to $3.35. With the exception of the year 1915, in which there was a decline of 6 cents in the average daily earnings of bituminous coal miners, there was a steady increase in miners' daily earnings until 1922. In that year their average daily money earnings were $8.83.

Index numbers of actual earnings indicate that the rate of increase of average daily earnings of coal miners was considerably more rapid than those of unskilled labor in manufacturing industries. In 1922, unskilled laborers in manufacturing industries showed an increase in average daily earnings of 99 per cent over the 1914 level, while the average daily earnings of coal miners showed an increase of 182 per cent over their earnings of 1914. The real earnings of coal miners, based on their aver-

age daily earnings, also increased more rapidly than those of unskilled laborers in manufacturing. The index for their real earnings has been computed by dividing the index of actual daily earnings by the index of cost of living, published by the Bureau of Labor Statistics. Unskilled laborers in manufacturing industries in 1920 show an increase in real earnings of 18 per cent over the 1914 level. In the same year the real earnings of coal miners stood at 27 per cent above their real earnings in 1914. In 1921, due to the wage cuts of that year, unskilled labor in manufacturing showed an increase of only 8 per cent over the 1914 level, compared with a 56 per cent increase over 1914 in the case of bituminous coal miners. In 1922, unskilled labor in manufacturing showed an increase of 21 per cent above the real earnings of 1914, compared with an increase of 74 per cent for bituminous coal miners.

Actual daily earnings of unskilled labor in the 23 manufacturing industries reported by the National Industrial Conference Board ranged from $2.45 for laborers in fertilizing manufacturing to $4.13 for laborers in the iron and steel industries in 1922. The average daily earnings of coal miners in the same year, $8.83, were therefore more than double the highest average daily earnings of any class of unskilled labor in any of the industries reported by the Conference Board. The average daily earnings of bituminous coal miners are, therefore, higher either from the point of view of purchasing power, or from the point of view of money earnings, than those of any class of unskilled labor in any other industry for which reports are available.

AVERAGE EARNINGS HIGHER THAN IN SKILLED LABOR

In its report on comparative wages, submitted to the United States Coal Commission, the Bituminous Operators' Special Committee also compared average daily earnings of bituminous coal miners with the average earnings of skilled employes in manufacturing industries. Wages of skilled employes in 21 manufacturing industries reported by the National Industrial Conference Board were used as the basis for comparison with the earnings of all classes of bituminous miners, as reported by the Department of Mines of the State of Ohio. The average daily earnings of bituminous coal miners in 1914 were $3.13. Of the 21 classes of skilled labor reported by the National Industrial Conference Board, only two had earnings exceeding those of coal miners in the first year of the comparison. Skilled labor in the iron and steel manufacturing industry showed average daily earnings of $3.20, and skilled labor in newspaper printing and periodicals showed average daily earnings of $3.43. In the other industries the average daily earnings ranged from $1.95 in the case of leather tanning and finishing to the high figure of $3.43 cited above. In 1922, the average daily earnings of coal miners, $8.83, were far in excess of the average daily earnings shown for any other industry, the nearest approach being in newspaper and periodical printing, for which the average daily earnings of skilled labor were $6.52. For the other industries the earnings ranged from this point downward to $3.83 for skilled labor in cotton manufacturing.

RATES OF INCREASE

The rate of increase of average daily earnings for all industries is shown to be considerably less rapid than the rate of increase of the actual daily earnings of coal miners during the period taken for comparison. Actual daily earnings of coal miners had increased 144 per cent above the 1914 level in 1920. The

greatest increase over the 1914 level of actual daily earnings of skilled labor in the 21 other industries shown in this group was 177 per cent in the case of skilled labor engaged in silk manufacturing and 156 per cent in the case of skilled labor in iron and steel manufacturing. All others show a rate of increase considerably less than those of coal miners, ranging from an increase of 77 per cent in automobile manufacturing to 177 per cent in silk manufacturing. The average daily earnings of coal miners, which showed an increase of 182 per cent over the 1914 level in 1922, is one of the few industries which shows an increase in actual earnings over the 1920 level.

From 1920 to 1922 skilled labor in the automobile manufacturing industry showed an increase of 11 per cent, cotton manufacturing an increase of 13 per cent, rubber manufacturing an increase of 19 per cent, boot and shoe manufacturing an increase of 13 per cent, and newspaper printing an increase of 1 per cent. These increases, however, are relatively insignificant in comparison with the increase in actual daily earnings of coal miners of 38 per cent.

The real earnings of skilled labor in all of the 23 manufacturing industries reported, except newspaper printing, boot and shoe manufacturing and automobile manufacturing, show an increase of real earnings over the 1914 level. These increases range from 2 per cent in the case of chemical manufacturing to 44 per cent in silk manufacturing for the year 1920. The real earnings of coal miners in 1920 showed an increase of 27 per cent over the 1914 level. In 1922 the real earnings of coal miners had increased 74 per cent over the 1914 level, while the greatest increase shown for any of the 21 manufacturing industries was 44 per cent in the case of the wool industry. All of the industries reported show an increase of real earnings over the 1914 level for skilled labor in 1922, the increases ranging downward from 44 per cent in the case of the wool industry to 4 per cent in the case of the meat-packing industry.

Skilled laborers in all industries combined showed actual daily earnings of $2.36 in 1914 compared with $3.13 for coal miners. In 1922, the average daily earnings of skilled labor in the 23 industries had risen to $4.73, as against $8.83 for coal miners. In other words, the average daily earnings of coal miners were practically double those of skilled laborers in 23 manufacturing industries. These average daily earnings represented an increase of 182 per cent in the case of coal miners and 101 per cent in the case of skilled labor in other industries over the 1914 level. The index of real earnings in the case of 23 manufacturing industries indicates that the purchasing power of their average daily earnings in 1922 was only 1 per cent greater than in 1914, while the purchasing power of the average daily earnings of bituminous coal miners was 74 per cent greater than in 1914. This means that while the purchasing power of wages of skilled labor in the 23 manufacturing industries reported was only 1 per cent better in 1922 than in 1914, the status of the coal miners was 74 per cent better, providing that the men in both classes of industries worked the same number of days in 1922 as in 1914. Thus, the unskilled bituminous coal miner with his 1922 earnings is able to maintain a standard of living almost twice as good as his standard of nine years ago, while the skilled industrial laborer has been able to expand his standard by only 1 per cent in the nineteen-year period.

SERIOUS CONSEQUENCES OF INFLATED EARNINGS

The high wage scale and high daily earnings in the union fields have

brought about most serious consequences to the operator, the public, and to the miners themselves. Most of the evil of overdevelopment can be traced to this cause.

The United States Coal Commission has said that there are 200,000 too many miners in the bituminous industry. This is scarcely to be wondered at, when it is considered that unskilled men can enter it and, without any previous experience or training, earn more working one half of the time than their highly trained comrades in other industries can earn by working full time.

The disadvantages to the operators of such an arbitrarily high wage scale are obvious. In times of slack demand and falling prices, the inflexible union wage scales force the mines in competition with those in the independent fields to close down.

It has been suggested that the proper remedy for this situation is the extension of the control of the United Mine Workers over the labor in the districts which do not now contract with that organization. The operators in these fields, however, have taken the position before the Coal Commission that they will not contract with the United Mine Workers so long as the union persists in its present policies and methods.

WAGE SCALES MUST BALANCE

It is for the public to determine whether or not this resolve of the operators in the independent fields coincides with its interests, but it seems to us that it is essential that these fields be kept free of monopoly control.

If this monopoly now existing in the union fields were extended to those fields which are now independent, nothing would then stand in the way of enormous increases in the cost of coal to the public through wage increases. The operators would have no incentive to fight the union's demands, as the increased costs could be passed on to the helpless consumer in ever higher prices.

The competition of the existing non-union fields, then, is a limit to the power of the labor monopoly to dictate its terms. It is hardly necessary to point out that, if the cost of production of part of the coal which is necessary to supply the needs of the national market is kept at a high level by the wages which the operators in the union fields are obliged to pay, the price of all coal, whether from the union fields or the non-union fields, will remain at a level which will enable the high-cost mines, whose product is necessary to supply the needs of the consumers, to continue in operation.

Prices cannot be brought down to the level proportionate to the prices of other commodities until this high wage scale forced upon the union operators by strikes and threats of strikes is brought into line with the wages paid for similar work in other industries.

LIMITATION ON LABOR MONOPOLY OF UNITED MINE WORKERS

But to bring the wages of bituminous miners into line with those in other industries, it is necessary to put some limitation on the labor monopoly now enjoyed by the United Mine Workers in the fields which contract with them. The Bituminous Operators' Special Committee, which is composed in equal proportions of operators who contract with and operators who are independent of the United Mine Workers' organization, take the position before the United States Coal Commission that the problem does not require the destruction of that organization. It does require the acceptance by that body of the high standards of responsibility and methods of dealing which are already used successfully by the more progressive labor unions of the country.

The Committee urged upon the United States Coal Commission the proposition that, if a combination of either Capital or Labor creates an artificial power to deal with labor relations, this artificial power must carry with it certain definite limitations. If individuals desire the power given by artificial combination, they must surrender certain freedom of action which the community could safely let them exercise as individuals. It does not seriously affect the public when small numbers of employes use the strike as a weapon to secure increased wages, and refuse to accept impartial arbitration. But where the artificial power obtained by nation-wide combination is used through the nation-wide strike to tie up the country's industries, the consequences to the public are most serious. The use of such a nation-wide strike to enforce demands becomes intolerable and the acceptance of the principles of arbitration becomes vital, if the public is to be protected from the disaster of a stoppage of industry through lack of fuel or the undue raising of prices because of an artificially inflated wage scale.

Wages in Bituminous Coal Mines as Viewed by the Miners

By Van A. Bittner
International Union of the United Mine Workers

THE earnings of bituminous coal miners have always been notoriously low. This condition of affairs has been due to fundamental factors over which the mine workers have had no control. The industry from an operating standpoint has been overdeveloped, unstable, intermittent and speculative. The evil fruit of these conditions has been the constant underpayment of those who work in and around the soft coal mines.

In the discussion of wages, there has been too much emphasis placed upon the extent to which rates of pay of both day and tonnage workers at the mines are higher now than they were before the World War. This has caused misunderstanding of the real status of soft coal mine workers for two reasons: (1) Rates were so low before the war in all mining districts that large increases in these rates have no special significance when related to what an adequate wage at the present time should be; and (2) the really significant point in a discussion of the wages of bituminous miners is not what rates of pay prevail, but rather what is the field of employment or what is the possibility as to earnings on the basis of the rates in effect.

Earnings Below Average

Prior to the war the earnings of bituminous mine workers were scarcely sufficient to maintain a bare level of physical subsistence for the mine worker and his family. During the years which have intervened there have been some improvements. Rates of pay have been increased, but after taking into consideration the increase in the cost of living, and the field for employment, the average mine worker is not able to earn enough to keep his family above a subsistence level, and the earnings of the average man fall far short of the amount necessary for a mine worker to support himself and his family in health and reasonable comfort. There are, of course, exceptional men, exceptional mines, and even exceptional districts, but looking upon the industry as a whole and considering the great majority of the workers, there can be no doubt that the earnings of bituminous mine workers are far below a standard of health, and modest frugal comfort.

This fact is conclusively demonstrated by the recent report on earnings by the United States Coal Commission.[1] According to this report (pp. 6–7) 18.4 per cent of the full-time tonnage men in non-union fields and 11.3 per cent in union fields earned less than $900 in 1921; 66.6 per cent, or two thirds in the non-union, and more than one half, or 54.7 per cent in union fields, earned less than $1,500 during the same year, or, in other words, a bare level subsistence for themselves and their families. If we arbitrarily assume that $2,000 a year, which is indeed a very conservative estimate, will support a miner and his family in health and frugal comfort, we find that only 9.7 per cent of the full-time tonnage work-

[1] United States Coal Commission—"Report of Earnings of Bituminous Mine Workers in 1921 with Supplementary Comparison with 1920." Prepared under the direction of Miss Anne Bezanson of the University of Pennsylvania, assisted by Miss Frances Chalufour and Miss Marian Hussey. (Issued October 3, 1923.)

ers in non-union fields, and only 12.7 per cent of those in union fields earned this amount or more during the year 1921. Only three full-time tonnage workers out of each hundred employed, either in union or non-union districts, earned $2,500 or more per annum.

As regards full-time day workers, the same report shows for union fields median annual earnings of only $1,690, and for non-union fields, median annual earnings of only $1,420. In the union fields the full-time earnings of the lower quartile of day men was only $1,320, and in non-union fields only $1,080. These earnings are obviously inadequate or insufficient to support a man and a normal family in health and decency.

The deplorable economic status of the mine workers, as indicated by the official figures quoted, are fundamentally due, as we all know, to the overdevelopment of the bituminous branch of the coal industry and to the inadequate transportation facilities upon which it depends.

The only stabilizing factor in the industry is the United Mine Workers of America. This has been true for the past quarter of a century. As long ago as 1898, the late Senator Mark Hanna, who was then a large operator, recognized that the remedy for the chaotic conditions which then prevailed lay in an agreement between the union and the operators in the Central Competitive Field. Largely under his influence the first agreement was made. Uniform labor costs for the operators were thus secured and the mine worker was delivered from his position as the ultimate sufferer from competitive conditions. This agreement was gradually extended to districts lying outside the Central Competitive Field, and order, comparatively speaking, was brought out of chaos and a greater degree of stability was attained.

TROUBLE LIES WITH THE NON-UNION FORCES

Before the industry can be stabilized, however, and made to function properly, the attitude of the anti-union operators must be completely changed and adequate transportation facilities provided. The underlying cause of the overdevelopment of bituminous mining has been the fight which has been made against the complete unionization of the soft coal fields. Prior to the war this tendency manifested itself in the opposition made by certain districts. A refusal to deal with organized employes usually led to a strike. While the strike was in progress the other unionized fields would expand their operations or develop new mines with the result that when the strike was over, and operations resumed in the district which had been shut down, the aggregate number of mines and their productive capacity had been extended beyond the demands of consumers of coal. To produce the same amount of coal as was needed before the strike, fewer days of operation of all the mines was necessary.

Within the past ten years these conditions have become more acute than formerly. Collective agreements between the union and operators were finally extended to about 75 per cent of the tonnage produced. Certain sections of West Virginia, Kentucky, Tennessee and Alabama, however, refused to enter into contracts with the union. Because of exploitation of employes in these non-union districts their competition became a serious menace to the operators who recognized the union. Several nation-wide strikes have resulted. During these strikes there has been intense activity in the non-union fields. As a consequence, when a settlement is reached, there has been further overdevelop-

ment in the non-union fields, which, in turn, intensifies competition under normal conditions, and leads to greater irregularity of production for the industry as a whole.[2]

During periods of depression, such as was experienced in 1921 and 1922, non-union fields reduce wages and lengthen the workday. They are thus enabled to undersell the union operator. As a consequence, unionized districts are frequently, in times of depression, completely shut down or only work intermittently, while non-union areas are operating at full capacity.

In times of active demand, the reverse is true. There is greater irregularity, and greater labor turnover in the non-union districts. In general, rates of pay and earnings are lower in the non-union mines. The labor turnover is also much greater as a rule in the non-union districts. These facts are conclusively shown by the investigation of the Coal Commission.[3]

THE PROBLEM OF TRANSPORTATION

These fundamental factors making for overdevelopment and irregularity are intensified by inadequate transportation facilities or the improper use of such facilities. In times of seasonal activity, the railroads cannot furnish sufficient cars or motive power to handle the coal needed. Moreover, their trackage and terminals are inadequate. Railroads also discriminate against commercial mines in assigning cars to selected mines for their own fuel needs, and certain mining and industrial corporations have also purchased and operate their own private coal cars. (Interstate Commerce Commission, Department of Mines.)

[2] See report of U. S. Coal Commission—"Relief from Irregular Operation and Overdevelopment," Sept. 20, 1923, pp. 2–3.

[3] See Report of U. S. Coal Commission—"Labor Turnover in the Bituminous Coal Industry."

Humanely speaking, the private car and assigned cars, where the practice prevails, is the greatest cause of labor suffering and discontent. Mine workers employed in such mines have an opportunity to work regularly and secure the maximum earnings. Their fellow workers in adjoining mines, on the other hand, have their working time and earnings correspondingly reduced. It was stated by operators from the Kentucky fields, in the hearings before the Interstate Commerce Commission, for example, that their employes were not able to earn a living, while adjoining mines with private cars were operating to full capacity. So serious has the situation become in general for the mine workers, that officials of the United Mine Workers intervened in their behalf in the recent hearings before the Interstate Commerce Commission.

These peculiar conditions in the industry have not only reduced the earning power of the mine worker; they have also added to the cost of coal to the consumer. The cost of production of coal rises or falls according to the regularity of the operation of the mine. Intermittent operation, or "a part-time" industry, means that coal is more expensive to the purchaser. The United States Coal Commission made an exhaustive study of the "Effect of Irregular Operation on the Unit Cost of Production of Bituminous Coal." In a report on this subject which was made public on September 12, 1923, the Commission, in part, said:

> The cost of producing a ton of coal, other things being equal, varies with the steadiness at which the mine is operated. If the mine runs every working day the cost is the lowest; each idle day adds to the cost of producing coal on the days worked. This is so because a part of the costs go on whether the mine operates or stands idle. Since irregular operation of bituminous coal

mines is the rule rather than the exception, it is important to determine the cost of idle days.

Taking the month of 25 working days as full-time operation, it is found that when the mine works 16 days, 4 days per week, the cost per ton is increased 8 to 9 per cent over full-time operation; when working time is 12 days per month or 3 days per week, that is, half time, the unit cost is 21 to 25 per cent over full-time or minimum cost; and when but 8 days per month or 2 days per week is worked, costs increase 48 per cent. Four days per month, or one day per week of operation raises costs 104 to 120 per cent over the minimum. If but one day is worked per month, the increase is from 474 to 549 per cent over full-time operating costs.

These figures are based on the detailed reports of costs of production made to the Federal Trade Commission for 1918 and to the Coal Commission for 1921.

We, the United Mine Workers of America, have done everything in our power to develop more stable conditions in the production of soft coal. We long ago realized that this was an essential condition to our members being able to earn a decent living.

COMPLETE UNIONIZATION

Stabilization in production attended by normal opportunities to mine workers to earn adequate wages, and, at the same time, by lower cost of coal to the consumer, could be attained were it not for the intense and unreasoning opposition of non-union operators. The industry cannot properly function on a basis of three fourths union and one fourth anti-union. Not only its stability but its efficiency is seriously impaired. Costs and prices are higher than they should be. The opportunity of the workers in the industry to earn sufficient incomes for the maintenance of proper living standards is hopelessly restricted. Energies and resources of both operators and mine workers are expended in the struggle for and against unionization, which, if applied to the real problems of the industry, and to coöperative efforts, would eradicate existing evils and place the industry upon a proper basis. Complete unionization is an essential preliminary to proper standards of work and compensation of bituminous mine workers, to stable prices to consumers, and to stable profits to operators.

The transportation situation, while of great importance, is of secondary consideration as compared with complete unionization. If the Interstate Commerce Commission will prohibit the use of private and assigned cars, it will reduce the tendency towards overdevelopment and towards irregularity in operations and insufficient earnings. Such action will be helpful and just, and should be had.

Enlightened public opinion, the best industrial practices and precedents, and the highest industrial statesmanship have long ago given their sanction to trade unionism as the basis of collective bargaining. The anti-union operators should be made to base their operations upon this verdict. So long as they do not they are running counter to accepted public policy. Their present attitude is the fundamental cause of the existing overdevelopment and instability of the bituminous coal-mining industry and of the deplorable economic status of those who work in and around the soft coal mines.

Wages, Hours and Working Conditions in the Anthracite Industry

By Thomas Kennedy
President, District Seven, United Mine Workers of America

IN the early history of anthracite mining we find that the first corporations to organize for the purpose of mining and shipping anthracite coal were the Lehigh Navigation Company and the Lehigh Coal Company, afterwards merged into what is still known as the Lehigh Coal & Navigation Company.

From 1818 to the period of 1865, the fixing of wage rates and working conditions was an individual matter between the employes and the individual operators. In those days there was no understanding between the various coal mining companies concerning united action with relation to wages and working conditions in the mines. During the years 1864–1865 the operating companies partially organized, and understandings were reached between the various companies in order to effectually meet conditions requiring the coöperation of the various operating interests in combating demands of the employes.

Pioneer Strikes in the Labor Movement—Failures and Successes

Among the workers the desire to organize arose and grew with the result that unions were organized in the region with varying success until the strike of 1875, when the Workmen's Benevolent Association, under the leadership of John Siney, attempted to enforce the provisions of an eight-hour law, which the miners' organization had been able to have adopted by the Pennsylvania legislature. The strike was lost, but the desire and necessity for organization still existed and animated the spirits of these brave pioneers in the labor movement. In various ways, and under several titles, the organization continued with ups and downs, until the strike of 1887 in the Lehigh and Schuylkill regions was fought to a conclusion. The 1887 strike lasted six months and ended in failure. Many causes are given for the failure, chief among them being that the lower region miners who were on strike journeyed to the northern fields where collieries were in operation and through the added force of greater number of workers, and the increase in the productive capacity extending into night and day shifts, the markets depleted by the cessation of operations in the lower fields were amply made up as a result of the flow of labor to the northern field. The strike resulted in failure of the mine workers to secure the results fought for. The men returned to work at lesser wages than they had received previous to the beginning of the strike.

In this connection it is interesting to note that the United States Coal Commission of 1923, in its report stated that, "The Labor Organization, which had been a strong factor in the industry, had disappeared by 1880." The facts are to the contrary, because the labor organization in the region had considerable power and influence between 1880 and the ending of the 1887 strike. The disastrous ending of the strike proved equally disastrous to the union and to all practical purposes, it passed out of existence, and the anthracite mine workers from 1887 to 1898, so far as wages and working

conditions were concerned, were at the mercy of the organized employers. Within this period many abuses were heaped upon the workers in the industry. Not only was freedom of expression and liberty denied within the industry, but also liberty and constitutional privileges were denied in the social, political and sometimes the religious life and desires of the workers and their families.

In 1897, as a result of the unbearable conditions imposed upon the workers, unorganized strikes occurred in many sections of the anthracite region and were in force when the United Mine Workers of America commenced organizing the anthracite workers. In 1897 many of the strikers gave up their lives in defense of the right to form a labor organization, and the right of free expression and assemblage. This gave impetus to the movement. A partial organization of the anthracite mine workers was effected by the United Mine Workers of America by 1900, and a strike occurred which resulted in a 10 per cent increase for all mine workers, notwithstanding that operations had not ceased entirely in the anthracite field. The success of 1900 gave courage to the mine workers, with the result that 1902 found the region organized stronger than ever in its history. The United Mine Workers profited by the disastrous experience of the Knights of Labor Policy in 1887 and made it known that the region as a whole should unite and cease work for the amelioration of conditions and the increase in wage standards. The strike of 1902 caused the practical suspension of all coal mining in the anthracite region.

In this day and age, when the land frequently resounds with the plea of the operators for mediation and arbitration, it is interesting to note the attitude of the operators in 1902 when John Mitchell requested arbitration. To this request, President Baer of the P. & R. C. & I. Company, speaking for the operators, replied:

PHILADELPHIA, PA., May 9, 1902.

JOHN MITCHELL:

I was out of town; therefore, the delay in answering your dispatch.

By posted notices, the present rates of wages were continued until April, 1903, and thereafter subject to sixty days' notice. Local differences to be adjusted as heretofore with our employes at the respective collieries. By written communication, by full discussion before the civic federation, by protracted personal conferences with yourself and the district presidents, we have fully informed you of your position. We gave you the figures showing the cost of mining and marketing coal, and the sums realized therefrom in the markets, in the hope of convincing you that it was absolutely impracticable to increase wages.

To your suggestion that the price of coal should be increased to the public, our answer was that this was not only undesirable, but in view of the sharp competition of bituminous coal it was impossible. We offered to permit you or your experts to examine our books to verify our statements. Anthracite mining is a business, and not a religious, sentimental, or academic proposition. The laws organizing the companies I represent in express terms impose the business management on the president and directors. I could not, if I would, delegate this business management to even so highly a respectable body as the civic federation, nor can I call to my aid as experts in the mixed problem of business and philanthropy the eminent prelates you have named.

GEO. F. BAER.

It will be noted that, while the present managers of the anthracite operating interests have considerably changed in their attitude with relation to conferences, arbitration, and contractual relations, they have not changed one particle in their attitude

concerning wages, and so-called competition between bituminous and anthracite coal. In 1902, they stated that it was absolutely impracticable to increase wages as a result of mining costs, etc. In 1922–23 they constantly reiterated the same. In 1902, they spoke of the sharp competition of anthracite and bituminous coal, and used this as a reason for their failure to increase wages. In 1922–23 they used the same argument, only they added oil to soft coal as a competitive factor. The strike of 1902 was waged for a period of approximately six months, and by agreement the matters in controversy were referred to a commission appointed by President Roosevelt.

WHEREIN THE COMMISSION OF 1902 FAILED

The awards of the Commission of 1902 gave a wage increase of 10 per cent to the contract rates; to the day men a nine-hour day with the same pay they formerly received for a ten-hour day. A sliding scale was provided giving to all classes of labor a further increase of one per cent in their rates for every five-cent increase above $4.50 in the selling price of prepared coal at New York Harbor. This sliding scale averaged 4½ per cent during the nine years it continued in existence. The Commission also created the Anthracite Board of Conciliation, which was to function in the settlement of any dispute which could not be adjusted between the employes and the company representatives.

The Commission based its awards on the conditions and rates in effect in April, 1902, and thus perpetuated the unwholesome conditions of employment and the low wage standards forced upon the mine workers during the unorganized period of their history between 1887 and 1902, because in the settlement of 1900 no conditions complained of were remedied, the only advantages being the securing of a wage increase and a reduction in the price of black powder. This was one of the most serious defects in the report of the Commission, but equally defective, and perhaps more so, was the neglect of the Commission in failing to provide for the creation of mine committees to be chosen by the employes to represent them in the initial presentation and adjustment of their grievances. The Commission provided for the final settlement of grievances, a board of conciliation, consisting of six persons; three to be selected by the operators and three by the miners' organization, and providing that, "At all hearings before said board, the parties may be represented by such person or persons as may respectively be selected."

In other words, before the board the men could choose their representatives, but the Commission did not give the right to the men to select their own representatives in the all-important first handling of their grievances, and stated that, "Only the miner or miners directly interested" should be permitted to handle grievances. The inconsistency of this attitude should be quite manifest, and the result was such that from 1904 to 1912, during the time the awards were in force with but very little change, few men raised grievances as individuals, and not having the protection of a committee of their own choosing, the organization dwindled; grievances remained unsettled, men worked under bad conditions in silent but resentful submission. Only in places where the men maintained at great sacrifice an organization were they able to hold what they had secured.

CREATION OF OFFICIAL MINE COMMITTEES

In 1912, after a short suspension, a new agreement was arrived at which

provided for a general 10 per cent wage increase and the abolition of the sliding scale. But more important than all was the general provisions agreed upon which provided for official committees at every mine, whose duty it was to take up the adjustment of grievances referred to them by employes of the colliery. If the committee failed to agree with the company officials, they then had the right to send the case to the board of conciliation. At all meetings of the mine committees they had the right to have a representative of the conciliator from the miners' side present at the meetings. This gave both district and local union protection and the benefit of trained officers experienced in the handling of grievances, so that in the period between 1912 and 1916 thousands of grievances were handled and adjusted by the mine committees which otherwise would never have been taken up by individuals. Most of these grievances had to do with the restoration of the wages and working conditions which were in effect in 1902.

The records of the board of conciliation show that grievances filed in the period from April 1, 1902, to April 1, 1912 (nine years), were 202; while the period from April 1, 1912, to April 1, 1921 (nine years), show 770 grievances filed. From April 1, 1921, to November 8, 1923, a total of 329 grievances have been filed.

It is quite evident from these comparisons that the creation and work of mine committees has done more to bring about harmony, coöperation and stability in the settlement of grievances than any other agency in the industry. Mine committees are now recognized as the responsible representatives of the employes at the colliery, and this responsibility has created a situation whereby local matters, which otherwise might result in trouble, are in most instances adjusted promptly without recourse to the board of conciliation. The mine committee has become one of the important units in the efficient operation of the colliery and the maintenance of peace which comes through the prompt settlement of local disputes, all of which tends to the satisfaction of all concerned.

The agreement of 1912 expired March 31, 1916, and after negotiations which continued with the collieries in operation, a new agreement was arrived at which provided for the eight-hour workday with the same wages for an eight-hour day as were formerly paid for a nine-hour day plus 3 per cent, and with a further increase of 7 per cent on contract rates. A large number of men such as engineers, pumpmen, watchmen and stablemen, were not brought under the eight-hour clause of the agreement. A number of the twelve-hour men who were denied the eight-hour adjustment were, in the opinion of the mine workers' organization, put on that basis and forced to accept the long day in violation of the awards of the Commission in 1902. However, most of these long-hour shifts were established when the organization was weak between 1903 and 1912, and the umpire in ruling on such cases, which were later raised as grievances, stated in effect, "That the men having accepted the conditions for a period of years were bound to continue," notwithstanding that a greater number of men thus affected were powerless to do anything else because of the absence of organization to protect their interests, and they therefore paid the penalty for their failure to properly organize.

INDEFENSIBLE ACTION OF GOVERNMENT COMMISSION

Owing to the abnormal situation brought about by the World War,

supplementary agreements were made in May, 1917, November, 1917, and November, 1918. The total of such supplementary increases amounted to $1.80 per day for outside men and $2 per day for inside men, and 40 per cent increase on contract rates. In March, 1920, the general and supplemental agreements expired and the mine workers and operators after protracted negotiations were unable to agree upon the terms of a new contract. At the urgent request of President Wilson, both sides agreed to submit matters in controversy to a commission to be appointed by the President. Both parties presented voluminous data and testimony to the commission which made its award in August, 1920. The award gave a 17 per cent increase to day men and 65 per cent increase to contract rates. This 65 per cent included the increases granted in supplemental agreements from 1917 to 1918.

The award of this commission was a disappointment and resulted in general turmoil, unrest and bitterness in the anthracite field, because of the fact that the commission practically ignored the testimony presented by the miners and rendered its decision upon the basis of compromise suggestions made by Government officials previous to the appointment of the commission.

Economic advisers retained by the commission found that the testimony introduced by the miners warranted an increase of 27 per cent on day wages, but the majority of the commission ignored the findings of the economic advisers, and substituted 17 per cent instead of the 27 per cent. The report of the advisers who recommended the 27 per cent was never contradicted by the majority members of the commission, and no reason, scientific or otherwise, was given for the award of the 17 per cent.

This indefensible action upon the part of the Government commission was one of the contributing factors which gave good reason for the attitude of the miners in opposing since that time the reference of any matters to a third party.

NEGOTIATIONS BROKEN OFF BETWEEN OPERATORS AND MINERS

On September 2, 1920, the awards of the commission were written into a joint agreement between anthracite operators and miners. This agreement expired March 31, 1922, and, no contract being in effect on that date, a suspension of mining took place. The operators and miners attempted to negotiate a new agreement and, after fruitless discussion, negotiations were ended because the anthracite operators demanded that the mine workers accept a reduction of 20 per cent in wages. After a five months' suspension an agreement was arrived at extending the agreement of September 2, 1920, to August 31, 1923.

Previous to the expiration of the agreement August 31, 1923, both parties entered negotiations and, after many days of conferences, negotiations were broken off. Both sides were later reconvened by the United States Coal Commission, but the Commission failed in any constructive suggestion towards reaching an adjustment.

THE RESULT OF GOVERNOR PINCHOT'S MEDIATION

Later, both sides reconvened at Governor Pinchot's request. As a result of his mediation and suggestions a joint agreement was arrived at which runs from September 1, 1923, to August 31, 1925. The new agreement provided for a wage increase of 10 per cent above the rates established in the agreement of 1920. The agreement also provides for the extension of the

eight-hour basic workday to all classes of employes in the anthracite industry. It further provides for the bringing up to date of the colliery rate sheets and clothes the board of conciliation with authority to undertake and complete a thorough study of all wage scales before the expiration of this contract and submit the same to the next joint conference.

Under the agreement the wages paid in the anthracite industry on the basis of an eight-hour workday range from $4.62 a day for outside adult labor to $5.96 for inside company miners. In isolated cases a special rate in excess of this may be paid for special skill or ability, the working time in the anthracite industry not exceeding 272 working days. On this basis men paid at the $4.62 rate would earn annually not over $1,256.64, while the total earnings of the highest paid inside day man would not exceed $1,620.12 a year.

CALCULATED AVERAGE EARNINGS NOT A FAIR AVERAGE

To receive these yearly amounts men would be obliged to work every day the breaker worked. Due to sickness and accidents and other causes, the men as a rule could not work all the time available, and, therefore, their earnings would be much less than the amounts quoted herein.

The wages paid to contract miners are based upon the output, the pay for their output being based on rates for yardage, car work, tonnage and other items paid for in the mining of coal on contract. The earnings of contract miners in the anthracite region are difficult to ascertain. The operators in arriving at the average earnings of contract miners usually take a small number of contract workers appearing on every two weeks' payroll and base their earnings upon that premise. This does not give a fair average of the earnings of contract miners, because contract miners who appear on every payroll usually are working in the best places and their earnings are higher than the average. They suffer no intermittency in work due to bad working places, with the result that the earnings of this select class are higher than the general average would show if all conditions and all earnings were taken into consideration. The United States Coal Commission in 1923, in its report on the earnings of contract miners states, "that it seems useless to undertake to give rates for tonnage work on account of the varying conditions." The Commission also found that tables made up of a selected class do not even give earnings of those within the selected class, and they give the following example:

> If a man worked 10 days in Colliery A; 6 weeks in Colliery B and 10 months in Colliery C, he would be reported by all three collieries and would appear as three units in the table, but no one of the three reports would represent his total earnings for the year.

Therefore, the Commission said it would not be practicable to follow each mine worker from colliery to colliery to secure his total earnings per year.

The Commission's report then proceeds to give the earnings in dollars, the average start per man and the number of men opposite the earnings and starts. The average starts run from 8 to 288 days and, quoting the earnings of thousands of contract miners on the basis of starts, the Commission in its own language found in part,

> that over 9,000 men appear on the various payrolls as having earned under $100 in individual mines, and as having worked on

the average in those mines only 6 days shows that a very large number are going from mine to mine seeking better opportunities for earnings, and through this shifting must have lost considerable working time.

In the absence of any fair or reasonable basis, I would say from experience and with some knowledge of the facts that a contract miner, who on the average works 248 days per year in productive work, can be classed as a person working under good opportunities for earnings, and the Commission found that this class would earn between $1,600 or $1,700 per year. In my opinion it is safe to say that this would likely give the average annual earnings of contract miners, and represent a safe, conservative approximation of the earnings of contract miners. This amount, $1,700 per year to the highly skilled contractor, is not sufficient and in no way compensates for the risks and hazards or responsibilities of their work.

HAZARDOUS CONDITIONS UNDER WHICH MINER WORKS

Conditions under which men work are also factors that must be taken into consideration in the formation of wage scales. Years ago, when the basic wage rates were adopted, as a general rule explosive gas was not encountered to any great extent and miners worked with naked lights and with fair ventilation, and thus were able to physically perform more labor than they can in mines where the work in smaller seams is becoming more general, the mines deeper and more extensive, explosive and noxious gases are becoming more pronounced, and where ventilation is a problem to the operators and a menace to the miner. We have mines which operated in 1903 with very few safety lamps in use; these same mines in 1923 are operating on the basis of locked safety lamps in the entire mine. The rates were established in these mines when they were free from gas, and no increase in wages has ever been paid for the increased hazard brought about by the changed conditions.

Quoting from the United States Federal Bureau of Vocational Education Bulletin 38, page 12, the work of the miner and his conditions are referred to as follows:

> The miner works under conditions quite different from those of the man employed in manufacturing. He works *underground*, in the dark, and often in rather cramped quarters. The foreman cannot supervise him constantly, for the mine is large, and the men are working singly, in pairs, or in very small groups, and one visit a day, or perhaps two, by the foreman, is all that is possible. While everything possible is done to make the general mining conditions safe, yet each underground employe must act as his own safety inspector, for danger is always present and conditions may change very suddenly. Again, the miner is concerned not only with his own safety, but with that of all the other employes, especially in coal mining. A single act of ignorance or carelessness may mean death or injury to others as well as to himself, and damage to the mine. When a machinist makes a mistake, the piece is scrapped, but when the miner makes one the consequences may be much more far-reaching. The operation of a machine involves certain knowledge and manipulative skill, but thousands of identical pieces may be produced. Mining, on the contrary, is not a process of repetition under identical conditions, for conditions are widely variable in different states, and in mines of the same district, or even within a single mine.
>
> The degree of responsibility of the miner is unusual. It is the highest of all productive workers in the mines below that of the supervisory and inspecting forces. He is not only responsible for his laborers, to see that they do their work safely and properly, but in gaseous sections his responsibilities really extend to all men in the sec-

tion. If, through carelessness, lack of training, experience or skill, the contract miner makes a mistake, all men in his section may suffer disaster.

As an indication of the hazard of the anthracite industry, I quote the following records of the Workmen's Compensation Board of the State of Pennsylvania.

The fatal accidents from 1916 are as follows:

1916	592
1917	602
1918	626
1919	664
1920	512
1921	545

The non-fatal accidents for the same period:

1916	25,610
1917	26,322
1918	22,268
1919	20,518
1920	21,659
1921	21,387

While the figures of non-fatal accidents include all those who were idle for a day or more, the records show that over 14,000 compensation agreements were written, showing that over 14,000 of these accidents incapacitated the injured person for a longer period than ten days, and they include loss of eyes, limbs, lacerations and other bodily injuries.

LAWS AFFECTING SAFETY

With relation to legislation as it affects safety conditions in the mines, practically all mine laws embracing safety measures in Pennsylvania were initiated and sponsored by the miners' organizations from the early seventies to date. This legislation covers every phase of mining, except electricity, and establishes a miner's certificate law providing for two years' experience as a miner's laborer before a man can secure a certificate for competency to permit him to work as a miner. The necessity for this law is more pronounced today than it was years ago, due to the changing conditions in the mine and the ever increasing hazard.

A mine foreman's certificate law is also in existence and, if this act were carried out in proper manner, the certified mine foreman and the certified assistant foreman could better protect and work for the safety of the men, but the spirit of this law is not carried out and the mine foremen and their assistants have been burdened with responsibilities of getting out coal at the lowest possible cost, and are held responsible for the output of the mine, all of which naturally tends to set aside the fundamental basis and intent of the mine foremen's certificate law.

SAFETY MEASURES INAUGURATED BY UNITED MINE WORKERS OF AMERICA

The modern first-aid movement found its inception in a law which the miners' organization pressed to passage in the Pennsylvania legislature. The anthracite mining laws are without doubt the best mining laws in the United States and the United Mine Workers of America takes pride in the fact that practically all of these beneficial measures were brought into being as a result of its activities. Its purpose has been and always will be to coöperate with mine management and with the Pennsylvania Department of Mines to the end that these laws may be faithfully observed and death and accident reduced to the lowest possible minimum.

There are serious problems to be solved in the anthracite industry with respect to conditions of safety and the well-being of the workers. We realize that the mine management has no easy task in this respect. The mine workers are not antagonistic in the attempted

solution of these problems, but rather invite the coöperation of all concerned to the end that they may be worked out with justice to the industry and to the men employed therein.

Any joint effort which would result in saving of human life or preventing accidents or extending the expectancy of life of an anthracite miner would be well worth the effort and would compensate for whatever sacrifices that might be involved in the joint solution.

Taken as a whole, the mines will become more dangerous year after year, and the problems of safety will become more and more important and urgent and will press for solution. Gas, electricity, and falls are the dangers that run up death and accident figures, while impure air tends toward a slow but sure decline in health and ultimately results in lung and asthmatic troubles that bring on premature old age and death.

The United States Coal Commission of 1923, in its report found "that the fatality rate that prevails in the anthracite region was higher than that in the bituminous mines in the same state."

WHAT WE OWE THE ANTHRACITE MINER

Taking these facts into consideration —and they are facts—we hold that the present wages paid to anthracite mine workers are not sufficient compensation for the work they perform. Contrasted with the bricklayer working in the open air and bright sunshine, with no hazard to his occupation, the earnings of the miner in an occupation requiring greater skill and in constant hazard of life and limb seem indeed pitiable. The plasterer, the carpenter, the mechanics of the various trades, all in positions requiring no greater skill or ability and with no occupational hazard, all receive earnings far in excess of the men who, deep underground, produce the fuel that makes our civilization possible.

It is the anthracite mine workers who walk and work with death in the mines; it is these men who give up their lives, suffer injury, and acquire lingering occupational diseases in order that coal may be produced. Among our people you will find thousands of wives made widows, countless thousands of children made orphans, and strong men made cripples; there you will see the worker declining in health and strength, his body gripped with asthma from the bad air and dust of the mines. Wage standards at their best can make but small return for the sacrifices and sufferings of the people of the anthracite region. The cost of anthracite coal can never be figured in dollars and cents alone; there must be added to the labor cost an annual toll of over 500 human lives, or over 20,000 workers who suffer accidents, or men and boys who do work as dirty and dangerous and yet as honorable as soldiers in war, who meet death and injury in order that coal may be produced to warm the homes of our people and turn the wheels of industry.

IN CONCLUSION

In conclusion, the United Mine Workers of America reiterate the claim made to the United States Coal Commission in 1923, "that the wages paid in the anthracite industry are not responsible for the high price which consumers are forced to pay for anthracite coal in the consuming territory," and informed the Commission that in our opinion an overcharge existed in the mining of coal, an overcharge in royalties, an overcharge in transportation, and an overcharge in wholesale and retail distribution.

The Commission found in substance that the operators were taking three

times more profit than they took previous to the war, and that royalties to land owners and other causes resulted in overcharges and that the question of transportation rates should be reopened, thus indicating their belief that an overcharge existed in transportation.

The Commission likewise found an overcharge in wholesale distribution, so that in essence, the Commission found that the allegations and reasons assigned for the high price of coal by the mine workers were made upon a foundation of facts.

The Commission found that the labor cost of a ton of coal was $4.12. The operators previous to this finding by the Commission stated that their labor cost was $4.11. No reason has been assigned by the Commission for their finding of a higher labor cost than was ever claimed by the operators.

Comparing this $4.12 labor cost previous to the present agreement with the price of coal paid by the consumer which went as high as $16 per ton, the obvious answer would be that the wages and the labor cost are not responsible for the prices being charged to the consumers in the anthracite-consuming territory.

The United Mine Workers of America believe that the future of the industry should hold in store for the mine workers higher wages than are paid at present together with basic uniform rates for similar work. Extra consideration should be given above the basic standard, uniform rates for work of an extra hazardous nature.

The anthracite operators generally receive a minimum standard rate for their coal. The anthracite operators are organized and they practically work the same veins at all of the collieries, and there is no reason why uniformity in rates should not exist in the region.

The United Mine Workers of America have two things which they expect to hold for good and all:

(1) A minimum standard of life which is good enough to be built on, but which cannot be lowered.

(2) A certain measure of independence in our united action as a union.

We have spent many years obtaining this standard and independence and will not consent to give them away through any form of compulsion, or to yield them in favor of any hasty makeshifts of new industrial machinery set up to compensate for the lack of correct industrial principle.

The United Mine Workers of America will continue to improve upon these standards of living, of wages and of conditions, and in doing so we are functioning legally and in the interests of constructive Americanism and a higher citizenship. We believe that our future can be improved upon without injury to the industry and without added burdens being placed upon the consumers, and in our worthy endeavors we believe we are entitled to the support of all those who love justice and humanity.

The Anthracite Industry

Wages, Prices and Regulation

By S. D. Warriner

President of the Lehigh Coal and Navigation Company

DESCARTES, the French philosopher, said, "I think, therefore I am." By this he meant that the power of thought was the determining factor of his manhood. Correct thinking is essential to complete understanding.

"With understanding comes power", and it is therefore our duty, before we exercise power, to arrive at complete understanding.

Anthracite is upon the firing line. Its labor relations, the conduct of its business, its very existence as a private enterprise under constitutional rights, are being made the subject of popular scrutiny and criticism. Unless, therefore, this criticism can be directed into constructive channels, the industry bids fair to become the unwilling patient of political doctors and the victim of legislative experimentation.

As a key industry, political and economic trend in anthracite will largely influence all industry, and as our social structure is so predominantly commercial, will profoundly affect the social organization of American democracy.

Industry Thoroughly Investigated

No industry has been so thoroughly or so frequently investigated by state and national commissions, and yet its major problems are imperfectly understood. And almost every day, it seems to us in the industry, there is a contribution to further misunderstanding. Within a few days one governmental body has issued a statement purporting to show exorbitant prices at which anthracite coal is currently being sold. By close examination it develops that this report relates only to a trifling percentage of the output—the so-called "premium" coal—but the headlines convict the whole industry of extortion. Another Government official publicly states that he is told that 20 per cent of the coal shipped contains an unfair proportion of rock and slate. This statement, which could not be based upon investigation of the facts and which I believe to be grossly untrue, carries to millions the belief that they are being swindled as well as overcharged. Out of a multiplicity of such reports as these grows a public opinion that tends to preclude just and wise determinations of public policy.

Admittedly, in contrast with the bituminous industry, anthracite has been stabilized, highly organized, and not overdeveloped. Yet these very characteristics are today the object of critical attack in that it is alleged to be operated under monopoly conditions, and is invested with a public interest, which requires either public regulation or Government ownership and control. Under such conditions, it is obvious that the industry cannot thrive, unless there be mutual understanding of the problems involved in the operation of the industry.

Is Anthracite a Monopoly?

At the outset this question arises—"Is anthracite coal a monopoly and so invested with a public interest as to require, in contrast with other industries, a special rule of conduct both in practice and in law?" If we answer, "Yes," to this question, and say that the anthracite industry must be

run like a public service corporation, under a special code of business ethics, with regulation as to methods and a limitation as to profits, then, by the same token, we must be prepared to ensure to capital investing in this industry, guaranteed return, and protection from competition, as in the case of public service companies.

The practical result of treating anthracite as a public utility would probably be to fix prices at higher levels than under private control. The Government would be obliged to permit, and possibly guarantee, a constitutional return on the investment which would be much greater for the industry as a whole than the existing rate of return as found by the United States Coal Commission. For the ten years beginning 1913 the average margin per ton after deducting Federal taxes is about 33 cents. This yields an average return on the book values of the property of less than five per cent, and the book values are substantially lower than the valuations of the engineers employed by the Coal Commission.

If, on the other hand, we answer that anthracite is not a public utility, then the freedom of this industry as a private enterprise must be maintained under the same laws and the same regulations that govern all industries guaranteed by the American Constitution.

My own answer to this question is that, although anthracite is certainly invested with a public interest in that the people of a limited section of this country find it a desirable fuel, it does not acquire thereby any greater investment of public interest than does any other commodity in common use.

A monopoly cannot be oppressive unless there goes with it public necessity for the commodity monopolized. This is certainly not true with anthracite.

The Coal Commission itself, although claiming anthracite to be a limited monopoly, says, "The main remedy, however, against extortionate prices lies in the consumer himself. There are substitutes for hard coal, and a readiness to resort to them is the ultimate and effective defense against an unreasonable price."

Secretary Hoover's commission of experts appointed to investigate the subject of community storage says emphatically that anthracite is not a public necessity, that in no community examined was it an exclusive fuel, its use varying with its price as compared with other fuels, from two per cent of the total fuel used in a city like Indianapolis to sixty per cent in a city like Buffalo. Even in the heart of New England only forty-two per cent of the fuel of Worcester was anthracite.

Furthermore, the use of coke is rapidly increasing, and a survey in New York City alone shows that within a few months 418,000 tons of anthracite have been displaced by oil. This is direct evidence that anthracite is subject to the same economic laws of competition as are other commodities, and that in the last analysis the business can only be maintained by the choice of its customers.

Any proposition, therefore, of Government regulation which limits the constitutional rights of investors in this industry must either be prepared to furnish substantial guarantee sufficient to attract capital in the anthracite business by freeing it from competition, or else the effort would be so evidently one of hostile class legislation, aimed at a particular industry, as to be obviously unconstitutional and ineffective.

Having shown you that anthracite is not a necessity and is subject to outside competition, I pass to two of the main features of the industry.

TWO MAJOR PROBLEMS

First, the industry in its labor relations.

Second, the industry in its relations with government.

The present determination of both these problems is confused because the American people have not a clear conception as to whether, in the settlement of labor disputes and in the determination of new legislation, their best interests will be served by the application of ordinary business rules of conduct or by the application of special treatment to the anthracite industry as a special case.

LABOR

Let me take up first the question of labor. It is of predominant importance.

Sixty-nine cents out of every dollar of production cost goes directly to labor. The annual labor bill for mining practically the same amount of coal has increased from $113,000,000 in 1914 to approximately $335,000,000 under the terms of the Harrisburg agreement.

Labor relations in the anthracite industry are the direct cause of our present economic trouble. Without constant strikes in the last two years, there would be no shortage of coal, no runaway prices, no present problem of public interest.

By agreement between the miners and the operators in September, 1922, the appointment of the United States Coal Commission was requested. The object was to prevent another strike by the publication of the facts in the industry, especially those relating to wages and working conditions. It is significant that the briefs of the miners contain no word of complaint against labor conditions. The policy of their campaign, before the Commission, was directed towards the suggestion of a nationalized industry, embodying the abrogation of property rights and private investments. The *raison d'etre* of this policy was obvious. It was to distract attention from the beam in labor's eye and direct attention to the mote alleged to be in the eye of industry.

The fact that the Commission upheld the adequacy of the wage structure did not prevent a repetition of additional demands in 1923, part of which were secured contrary to the findings of the Coal Commission, through the intervention of the Governor of Pennsylvania.

WAGES

Do anthracite wages compare favorably with wages in other industries, and have they been adjusted to compensate for increased costs and higher standards of living?

For twenty-five years there has been no recession in wage rates, and there has been steadily improved opportunity for employment throughout the year. The industry compares more than favorably with other industries in stability of operation. The average yearly earnings of anthracite workers continuously accepting employment is about $2,000.

As compared with the base period of 1914, anthracite labor has been increased 188 per cent as against 115 per cent in manufacturing and 131 per cent in railroading. As compared with an average hourly rate of 55 cents in all industries in this country for skilled and unskilled workers, the minimum wage for outside common labor in the anthracite field is 57¾ cents.

HUMAN RELATIONSHIP

What about human relationship? Is there a point of contact between

employer and employe whereby the men are protected against abuse and through which they meet and adjust grievances?

Anthracite labor has the protection of the strongest union in America. It is recognized, met with and contracted with in the negotiation of all agreements. Furthermore, there has been in existence since the Roosevelt Award of 1902, an industrial government in the Board of Conciliation with an umpire, under which the worker is protected against injustice or discrimination and through which any grievance, however small, can be arbitrated and adjusted. The district presidents of the union on the Board and the local representatives in each colliery represent the men. The most advanced social reformer could hardly suggest better protection and it is a fact that no just grievance goes long unredressed.

WORKING CONDITIONS

Do working conditions conform to advanced standards as to hours of work, opportunites for advancement, for recreation, for education?

There is the universal eight-hour day. The contract miner seldom works more than three-quarters of this time. There is every opportunity for advancement to the higher positions of skilled miner, many of whom earn $3,000 to $5,000 per year. With an increase in the cost of living compared with 1914 of only about 64 per cent, and increased earnings of 188 per cent, standards of living are obviously improved. Recreation and education in as good schools as are existent in any part of the country are available to all.

CONCLUSIONS AS TO LABOR CONDITIONS

These are the outstanding facts of an industrial organization which certainly has the foundation on which a structure of helpful coöperation ought to be built and which challenges the criticism of the most advanced thought—an eight-hour day, high wages, conciliation and arbitration, and a strong union. Yet, curiously, of all the voices raised against the industry, the voice of labor has been the loudest.

As to wages, I recognize the responsibility of industry towards employes and am as insistent as anyone to secure for them the full fruits of their toil. No one doubts that labor today is in the ascendency and if the "white collar" class is not disposed to compete for the increasing fruits of labor they must be prepared to pay the bill. But there is a more fundamental question to be answered. Anthracite is but one branch of our industrial life.

Organized labor is so dominated by the idea of class conflict with the employer on one side and wage earners on the other that it overlooks other conditions of more importance. It fails to see that there may be injustice in the relations between workers in the various branches of industry to each other as well as to the other employers and employed. The rise in the price of fuel reaches beyond the mine owners and the employing class and comes home to the entire body of people who work for wages.

There is fundamental injustice in this situation and it is questionable to what extent and how long labor in one basic industry like coal can impose a tax on other labor by increased wages and expect other labor to buy its product.

PRESENT LABOR UNION TENDENCIES

Criticism of labor relations in the anthracite field is often based upon the conditions of twenty years ago. Whatever may have been the abuses at that time through the dominance of the employer, the union must now see to it that in its own dominance even

greater abuses do not exist. The present industrial organization is not working well, ideal though its provisions may be, and the responsibility for this condition must rest with the party in power. The union need no longer be a militant organization. Constructive coöperation and support of the common weal must supplant destructive antagonism. The union reached its present position by bargaining collectively, by keeping inviolate the contracts it made, and by submitting to the arbitration of a third party unsettled disputes. An unfortunate change has now set in. Its present tendency to substitute force for persuasion, to resist arbitration, and to employ direct action by means of illegal strikes instead of appeal to the tribunal of reason provided for in the agreement, are rocks which may wreck its progress in public esteem, just as surely as it may wreck the industry from which it draws its livelihood. Sane leadership must assert itself. Will it meet the emergency?

ECONOMIC EFFECT OF SETTLEMENT

The method of settling differences on the termination of agreements, and the economic effect of haphazard settlements are of more importance than the terms of the settlement themselves. If, as the operators urge, arbitration, as a means of sound adjudication after investigation, were followed, there would be greater assurance of sound settlements with justice to all.

If the recent settlement be in accordance with economic law, imposing fair treatment for all concerned, the result should be satisfying and no explanation or justification required. If, on the other hand, it represent a dislocation of economic law by a resort to expediency, then those who are responsible must bear the consequences, economic and otherwise. Where doctors disagree in diagnosis, the patient is in danger, and out of this analogy I wish to draw this conclusion. No one can foretell exactly the economic consequences of the recent settlement, but that the strain upon the public and the industry will be severe is beyond dispute.

PRESENT COMMERCIAL SITUATION

No one is more desirous than the operators to keep down prices. They realize the advantages of satisfied customers, and the dangers of a price which invites an invasion of their markets by competing fuels. They are not satisfied with the present situation.

At the present time domestic sizes of anthracite are selling in Philadelphia at an advance of 120 per cent over 1914. The increased cost of production is approximately 165 per cent. The continued sale of coal at the advanced price is measured simply by the public's willingness to pay for a particular product, of which the supply is limited. At the same time the smaller or steam sizes of anthracite, forming 30 per cent of the production, are selling below last year's prices simply because of lack of demand and accumulating stocks. Supply is rapidly catching up with demand for the domestic sizes, and this will soon be evidenced in the disappearance of so-called "premium" coal which can only find purchasers in time of scarcity produced by strikes. When supply exceeds demand there will be no coal problem except for the producers and especially the high-cost producers.

Larger domestic use of the smaller sizes of anthracite is an obvious measure of relief. The industry is actively promoting such use, and as an example of what can be done there are in the neighborhood of Harrisburg some 3,000 installations for burning the small buckwheat coal in residences. En-

couragement is being given by the industry to all good devices for burning the smaller and cheaper sizes, looking to a broadening of demand in place of the present custom of using only three of the eight sizes of anthracite that are necessarily produced.

RELATIONS WITH GOVERNMENT

Now I turn to the next division of my subject—the relation of government to industry. This is a delicate problem. Restrictive laws forbid co-operative action, essential to efficiency and self-regulation, while the public and public officials blame the industry for lack of self-regulation. Group responsibility cannot justly be visited on any industry where laws deny freedom to act as a group. Out of this contradictory situation have arisen most of the difficulties of the anthracite industry and obstacles to improved service in the interests of the public.

Although the United States Coal Commission found that "Coal and transportation are a single service," our legislatures, our executives and our courts have spent years in divorcing these activities.

TRANSPORTATION RATES

Although transportation rates are regulated and fixed by a governmental body and the operators have no control over them, nevertheless public criticism has been directed against anthracite freight rates, and operators have been just as much criticised on this ground as on any other account. Public regulation, in this respect at least, has not brought greater public satisfaction than private management in the anthracite industry.

ANTI-TRUST LAWS

The anti-trust laws are perhaps the greatest cause for inconsistent policies and unjust criticism. The public criticises the entire anthracite industry for the occasional malpractices of a few and denies that industry freedom to coöperate for their correction. As a case in point, it has been suggested by the Governor of this state that the operators endeavor to control the activities of some 55,000 retailers by refusing to sell coal to those who charge higher retail prices than in 1922. Under the decision of the courts, we cannot under existing laws, Federal or state, resort to such measures.

Apropos of this suggestion, I would like to remind you that in the Trans-Missouri Case, decided by the Supreme Court of the United States a few years ago, the Court held among other things that any agreement or combination which permitted dictation as to prices was illegal, even if as a result of the agreement or combination the price was lowered.

I now quote the exact language used by the Court in the course of its opinion:

> It is not for the real prosperity of any country that such changes should occur which result in transforming an independent business man, the head of his establishment, small though it may be, into a mere servant or agent of a corporation for selling the commodities which he once manufactured or dealt in, having no voice in shaping the business policy of the company and bound to obey orders issued by others. Nor is it for the substantial interests of the country that any one commodity should be within the sole power and subject to the sole will of one powerful combination of capital.

It has been suggested that the arrangement proposed by the Governor, although forbidden by the Sherman Act, would be lawful under the common law of Pennsylvania as confined to purely intra-state transactions. Even if this were so, the result of the arrangement would be to benefit the consumers of the small percentage of

anthracite coal which is used within the boundaries of this state, at the expense of the consumers in all the other states.

But Lord Mansfield, one of the greatest authorities on the common law, said many years ago:

> That if an agreement was made to fix the price of salt, or any other necessary of life, by people dealing in that commodity, the Court would be glad to lay hold of an opportunity, from what quarter soever the complaint came, to show their sense of the crime, and that at what rate soever the price was fixed, high or low, made no difference, for all such agreements are of bad consequence and ought to be discontinued.

And I am advised that this is, undoubtedly, the common law of Pennsylvania.

COMPETITION

The United States Coal Commission finds that the limited supply of anthracite prevents the public from deriving benefits from competition within the industry, and yet the industry and the public are obliged to limp along with all the disadvantage of a compulsory competition which yields no benefits.

Under the present régime, which restricts intelligent coöperation, prices cannot be standardized, distribution cannot be handled in the most efficient way, and abuses by a few cannot be eliminated by the majority. Safeguards of the consumer, so far as this industry is concerned, do not flow from competition within the industry but from the competition of other fuels outside of the industry.

REVISION OF ANTI-TRUST LAWS

This leads to the question, should we not revise our anti-trust laws as applied to industry of this character and place upon the industry—for a fair trial at least—the full power and responsibility of self-regulation? Certainly it is not sound public policy to transfer from experienced managers to the political arena the regulation and control of this industry until the managers have been given an opportunity to try and work out their problems under laws which permit collective action and self-correction.

There is grave danger that the popular sport of hunting coal operators will frighten capital from the industry and thereby injure those workers and communities dependent on it without the slightest benefit to the consuming public. Give a dog a bad name and you know the result. Efforts to discredit the industry and unfairly regulate or tax it will in the end militate against the best interests of the state.

TAXES

For example, Schuylkill County is endeavoring to base its taxes on a valuation of $437,000,000 as compared with previous valuations of $62,000,000. Other counties do likewise. Thus an exaggerated valuation is placed on the property within the state for the purpose of local taxation, while the Coal Commission presents figures of only a fraction of this amount for the purpose of determining what is a fair rate upon invested capital.

An extraordinary situation has arisen in connection with the Pennsylvania anthracite tax. Last winter anthracite prices were controlled by the Pennsylvania Fuel Commission, and the operators kept down the price in the public interest. But when the operators made returns required for this tax, based upon the prices at which their coal was sold, the Auditor General announced that these prices were below the market value of coal and that the Commonwealth has assessed for taxation the coal sold during the control period at much higher prices, thereby asserting as a fact that, generally

speaking, the operators have sold their coal for less than it was worth.

These are but illustrations of many instances where the industry suffers through inconsistent policies and an unfair attitude on the part of state officials. Is it fair that the state of Pennsylvania should single out for discriminatory taxation a product of which 85 per cent is consumed outside of the state? And even if this be fair, how can the state justify its attitude in basing that tax on a value in excess of the price at which the coal was sold? The impression has already gone abroad in other states that Pennsylvania through such policies is asking her sister states to bear unfair burdens.

CONCLUSION

Has not the time arrived for the public and the Government to change its attitude of blind hostility and to endeavor to reach a clear understanding of the essentials of the industry with a view to constructive coöperation in the interests of all concerned? The anthracite industry, I believe, is managed by men who in ability, character and consciousness of social responsibility are the equal of other captains of industry. All of its decisions on major policies are of necessity made with a regard to public opinion and public interests. The industry performs a useful service, pays high wages, observes good working conditions, cooperates in community welfare and takes unto itself a margin of profit which is moderate indeed as business standards go.

The embarrassing situation in which it finds itself is not due to the selfishness or stupidity of anthracite operators but to obstructive laws and the inherent intricacy and difficulty of the problems with which it is confronted. Its principal danger is that an all too busy American people will not find the time or opportunity properly to study those problems before passing judgment. But—

> On fires that burn with heat intense,
> Let's turn the hose of common sense.

Wages, Margins and Anthracite Prices

By Gifford Pinchot
Governor of Pennsylvania

DURING the late summer of 1923 I had been following the anthracite strike situation with attention, but had carefully refrained from saying or doing anything further while the matter was still in the President's hands. Finally, on August 23rd, since the date set for the strike was almost at hand, from Harrisburg I called up the White House to ascertain whether or not I was free to take action. The next day I learned at Washington that the Federal authorities had no plan beyond the use of substitutes, and that I was free to attempt to settle the strike.

The last coal strike had caused six thousand extra deaths in Pennsylvania alone, to say nothing of the huge body of suffering of other kinds and in other states. The people of the anthracite-using states, who number far more than a majority of our whole population, in the face of approaching winter, were clamoring for coal. Accordingly, I asked the committees representing the operators and the miners to meet me in Harrisburg on August 27th.

The story of the negotiations does not properly form a part of this discussion. I have, however, asked for and received from the Academy the privilege of printing the important public statements made at that time as an appendix to my paper.

Early in the negotiations it became evident that the choice lay between the threatened shortage of anthracite and a possible settlement with a small increase in the cost of production of coal. Whether or not this increase was justified, and whether or not it ought to be passed on to the consumer, are two questions with which this paper deals.

There are two points in the strike settlement which I suggested, and which were adopted, which increased the cost of producing coal. One was the eight-hour day for all workers, and the other was the ten per cent increase in wages.

The Eight-Hour Day

For all but two per cent of its workers the anthracite industry had already put in effect the eight-hour day. The experts of the United States Coal Commission advised me that the cost of extending it to all workers would be between one and two cents per ton. There being no question of the justice of the arrangement, I recommended it, and it was adopted as a part of the final settlement.

The Ten Per Cent Increase in Wages

At the time of the negotiations a table showing the number of workers in each occupation in and about the mines, and their daily rates of pay, was before me. The rates of pay for similar occupations in other industries were also available. From them, and from prolonged conferences with operators, miners, and the best informed observers I could reach, I concluded that a ten per cent increase would give to workers in the anthracite industry a wage not above that now prevailing in other occupations, even without taking full account of the unusual hazards of their occupation. Subsequent investigations have confirmed my conclusions at that time.

It was urged that a ten per cent increase would give too high a wage to the contract miners, the highest paid of the industry. There had been, it is true, a leveling up in previous awards through which the wages for contract miners came within about ten per cent of keeping abreast with the increased cost of living. With the ten per cent increase they would just about do so. The wages of other occupations had started further below a decent standard of living, had increased at a rate more rapid than that of the cost of living, but had not yet caught up.

The wage increase I suggested was just and necessary to provide a decent American standard of living, to match the going wages in similar industries, and to compensate in part, but only in part, for the extra hazards of an industry in which twenty thousand men are hurt each year. The ten per cent increase was fully warranted not only because a supply of anthracite even at a small increase of cost was infinitely better than no anthracite at all, but also because the eight-hour day and the ten per cent increase on their merits were completely justified. The anthracite workers deserved and should have had both of them, wholly without reference to the threatened strike.

It is worthy of comment that the operators, who publicly opposed the ten per cent increase as unjustified, promptly accepted two years as the term of the agreement, although my recommendation only called for "not less than one year."

The existing wage schedule is cumbersome, unscientific, and often unjust as between different occupations. To iron out these injustices would have taken many months. I recommended, therefore, that a special study be made as a basis for a new and equitable wage schedule, and this was agreed to.

ACTUAL COST OF THE WAGE INCREASE

How much did the ten per cent increase in wages add to the actual cost of producing anthracite?

The United States Coal Commission supplies complete data for the year 1921 as to prices and quantities of each grade of anthracite coal produced. The increase in the cost of prepared or domestic sizes, in which the people are mainly interested, depends in part on the relative amount of steam and domestic sizes produced. Let us take first the ten great railroad coal companies. Their actual labor cost for the year 1921 averaged $3.97 per ton. Ten per cent of this adds 40 cents per ton to the cost of producing coal, and since labor rates did not change after 1921 that is the total increased cost. For these ten companies the added cost of producing all anthracite, including both steam and domestic sizes, due to the ten per cent increase, was 40 cents a ton.

But it was claimed that the increase could not be added to the price of steam sizes. On the basis of 1921 prices for the relative quantities of steam and domestic sizes produced in 1921, the increase in price on all domestic sizes, including pea coal, averaged 52 cents per ton for these ten companies. Assuming that no part of the increase could be borne by pea coal, the increase for all other domestic sizes would have averaged 58 cents per ton. Assuming 25 cents could be added to the price of pea coal, the average increase for other domestic sizes would have been 55 cents per ton. Fifty-eight cents per ton is, therefore, the maximum average increase in labor cost on domestic sizes for the ten railroad companies, representing three-fourths of the production.

For 48 companies, representing 96 per cent of the production, the increase in cost would have been 53 cents per

ton on domestic sizes had an equal increase been borne by pea coal; 58 cents per ton had none of the increase been borne by pea coal; and 55 cents per ton had 25 cents per ton been added to pea coal. As a matter of fact, the price of pea coal has actually been raised since the settlement, an average of about 25 cents per ton. Therefore, 55 cents is the whole of the increase in cost per ton on domestic sizes for 96 per cent of the total production that can in any way be charged up to the increased wage.

With these facts in mind, and remembering the one or two cents added by the eight-hour day, and remembering also that the price of steam sizes might somewhat decline, I said to the public that the increased cost on domestic sizes should not exceed 60 cents per ton. In doing so I did not fail to recall that some mines produced at higher cost than others, and that the relative quantity of steam and domestic sizes varies from year to year. It was imperative to maintain full production, and I wanted to be more than fair to the operators.

In the face of a known maximum legitimate average increase in labor cost of 60 cents a ton, how much did the operators advance their margins? The least advance was 70 cents, or 10 cents beyond the maximum justifiable amount. Some advanced their prices as much as 90 cents a ton, or 30 cents more than the average added cost, and a few to more than $1.00 per ton. In a word, the operators not only passed the whole increase in cost over to the public, absorbing none of it themselves, but took advantage of the situation to add to their own profits.

SHARE OF THE OPERATORS

The operators should bear at least 10 cents a ton of this increase, as I said at the time; and this would be more than fair to the operators. The margin of the ten railroad companies in 1921 was 85 cents, or two and a half times their three-year pre-war margin. The margin of these same companies for the first quarter of 1923 was $1.18 a ton. To have absorbed 10 cents of the increase would have left these operators on the average $1.08 per ton, which is 33 cents per ton above their high margin of 1921, and 73 cents a ton above their three-year pre-war margin, which was 35 cents.

My only reason for suggesting that the operators should absorb as little as 10 cents per ton was that, in view of the great need for coal, I did not want to see the output of the highest cost companies reduced. Many of the operators, as I said at the time, could absorb the whole of the 60 cent increase in production cost and still make ample profits.

In 1921, 92.4 per cent of the anthracite was produced at a margin of 99 cents per ton, or less. The absorption of 10 cents out of the 60 cents which I suggested would have left a margin, on the basis of prices in the first quarter of this year, of $1.08, and, therefore, would have given substantially the whole of our anthracite production larger profits than it enjoyed in the exceptionally profitable year of 1921.

MARGINS

What is left after the cost of labor, supplies, and all general expenses are deducted? What is the margin the anthracite operators have left with which to pay dividends, taxes, interest and profits? For the ten railroad companies this margin in 1913 was 33 cents, in 1914 it was 39 cents, in 1915 it was 33 cents. The average margin for these three years for these ten companies was 35 cents per ton.

In 1921, the year of depression, when business needed the stimulus of lower

coal prices, when many consumers were hard put to it to buy coal at all, and when the farmer's dollar was worth 67 cents, these ten railroad companies exacted a margin of 85 cents, or nearly two and a half times what they got before the war. In the first three months of 1923, when consumers were begging for coal at any price, these same companies helped themselves to an average margin of $1.18, more than three and a third times their pre-war margin. And today these same companies are taking margins well above those they took in the first quarter of the present year. They are adding to the extortionate margins of recent years by passing not only the whole of the wage increase, but much more than the whole of it, on to the consumer.

MARGINS IN 1921 AND 1923

The margins in 1921 were nearly two and a half times those of 1923, over three and a third times larger than the pre-war margins. Let us see what this means as to quantity production. In 1921 only 8.6 per cent, or less than one-tenth, of the anthracite mined yielded margins of 99 cents or over per ton. In the first quarter of 1923, 52.3 per cent, or more than one half, of the tonnage mined yielded margins of 99 cents per ton or over. And still the operators increased their margins upon the pretext of the recent wage advance.

MARGINS AND THE CONSUMER'S DOLLAR

No labor or other operating costs are paid from these margins. Out of each dollar realized by thirteen large anthracite operators from the sale of coal in the four pre-war years from 1913 to 1916, 61.3 cents went for labor, 12.3 cents went for supplies, 13.4 cents for general expenses, and 13 cents for the operator's margin. In the first three months of 1923, on the same accounting basis, 59.5 cents out of each dollar received by the operators went for labor, 10.8 cents for supplies, 11.5 cents for general expenses, and 18.2 cents for the operator's margin. These figures mean that the operators early in 1923 were adding to the price of their coal all their increased costs of every sort, plus 5.2 cents more out of every dollar. Now they are doing the same thing over again, by raising their prices more than their costs are raised. Under this system wage increases pay handsome dividends to the operators.

These figures cannot be dismissed with the statement that the money investment has greatly increased since 1913, for in fact it has not. Moreover, the companies which supplied the foregoing figures are mining now just about the same amount of coal they were mining ten years ago.

The first ten months of 1923 show a production of anthracite of 79,412,000 tons. This is from two to five million tons more than has ever been produced in the same period since 1919, excluding the strike year of 1922. Anthracite is being produced in quantities that justify neither the talk of scarcity nor the charging of extortionate prices. It is little wonder that the Federal Trade Commission reports a downward tendency in recent weeks in the quotations on high priced premium coal.

ANTHRACITE A MONOPOLY

All the anthracite there is in America lies in Pennsylvania. In 1921 forty-eight companies produced 93 per cent of all the commercial tonnage, and seventy-four companies produced 99 per cent. Today ten railroad companies produce about three-fourths of it. It is commonly believed that financial relations exist between these ten railroad companies and some of the so-called independent operators. Common report asserts that there has long

been and still is a common financial arrangement between these ten railroad companies and the anthracite carrying railroads.

It is commonly believed that most of these large companies make exorbitant profits through wholesale companies of their own, and that the wholesale companies affiliated with some of the large operating companies take an extortionate return for their services. Thus the Delaware, Lackawanna & Western Coal Company, the sales agent of the Glen Alden Coal Company, has paid dividends averaging 50 per cent for each of the six years from 1917 to 1922 inclusive.

It is also generally believed that many of the larger operators have common financial interests with many retailers.

In my opinion the whole combination is a hard-boiled monopoly whose prime interest in the public is that it shall consume their coal at their price. I share the common belief that the financial interests, which so largely control anthracite from the mine to the coal bin, help themselves to abundant profits as operators, take more profit as wholesalers, take still more in transportation, and in some cases take all they can get as retailers besides.

DIVIDENDS

That these margins represent very large profits is shown by the size of the dividends paid by some of the companies. Thus the Lehigh Valley Coal Company, according to their own statement printed in *Poor's Manual*, paid dividends of about 25 per cent in 1917, 21 per cent in 1918, 8.5 per cent in 1919, and 134 per cent in 1920. These were the dividends before the extra large margins of 1921 and 1923. In 1921 this Company declared a dividend of 72 per cent. Coxe Brothers & Company in 1920 paid a dividend of 91.7 per cent, and this was before the high margins of recent months. In the three years previous to 1920 this company paid dividends of 9 per cent, 10 per cent, and 24.5 per cent respectively. In 1921 its dividend was 83 per cent.

The Lehigh & Wilkes-Barre Coal Company paid dividends of 13 per cent each year from 1909 to 1920, and in 1921 cut a melon of 226.5 per cent. In 1922, the year of scant operation because of the strike, this company paid a dividend of 23 per cent. The Pennsylvania Coal Company paid dividends of 59 per cent in 1920, 137 per cent in 1921, and 168 per cent in 1922. The Hillside Coal & Iron Company paid 70 per cent in 1920, 205 per cent in 1921, and 190 per cent in 1922.

The stock of the Glen Alden Coal Company (a stock of no par value) was offered to stockholders of the Delaware, Lackawanna & Western Railroad Company in 1921 at $5.00 per share. In 1922, shares of this same stock sold for as high as $63.75, and on November 13, 1923, they sold at $77.25. In December, 1922, the Glen Alden Coal Company paid a dividend of $1.50 per share, and in June, 1923, a dividend of $2.00 per share. In November of the same year another dividend of $2.50 per share was declared. Based on the original price of $5.00 per share at which this stock was sold in 1921, the 1922 dividend amounted to 30 per cent, and the two 1923 dividends total 90 per cent.

How much the 1921 dividends of these companies amount to per ton is worth noting. The dividend of 137 per cent of the Pennsylvania Company amounted to $1.30 per ton; the dividend of 205 per cent of the Hillside Coal and Iron Company amounted to $1.51 per ton; the dividend of 72 per cent paid by the Lehigh Valley Coal Company amounted to $1.03 per ton; the dividend of 83 per cent by

Coxe Brothers & Company amounted to $1.52 per ton; the dividend of 226.5 per cent by the Lehigh and Wilkes-Barre Company amounted to $4.10 per ton.

Figures for the net profits of these companies are not available. But that these margins reflect fairly the net profits is shown by such additional facts as these:

(1) The net income of all the railroad coal companies, exclusive of the Glen Alden, the most profitable of them all, grew from an average of $13,000,000 in the three years 1913 to 1915 to $33,000,000 in 1920, an increase of two and a half fold, and

(2) the Glen Alden Company has to date charged to its costs for land depletion a total of $3,685,000. This is two and one-half times the original cost of the land, and these lands now stand on the books of this company at $12,575,000, or nine times their original cost.

These margins and dividends have of recent years been far and away larger in the anthracite industry than in any other major industry known to me in the United States.

FREIGHT RATES

The present anthracite freight rates are the result of blanket percentage increases above the rates prevailing in 1914. In that year the rate on prepared sizes from the Wyoming District to tidewater was $1.60 per ton. It is now $2.39 per ton, an increase of 19.4 per cent. The present rates perpetuate the injustice of the rates in effect in 1914, which were themselves adapted from the old percentage contracts. Of the 1914 rates the Interstate Commerce Commission said (35 I. C. C. 232):

> The evidence in this case conclusively shows that the rates on this commodity were established at an excessive basis, and clearly it was so done for the purpose of eliminating the independent output as a factor of competition in the markets with the railroad interests' output.

Anthracite freight rates are unquestionably too high. I have no conclusion to state as to what would be fair rates for carrying anthracite, but it is worth remembering that, if these rates returned to the same relation between rates and costs as existed in the rate basis adopted and approved by the Interstate Commerce Commission in 1915, there would result a reduction of 17 per cent or 41 cents per ton below the present rate from the Wyoming District to tidewater.

ROYALTIES

We hear much of the heavy royalties levied against anthracite mined from leased properties as an excuse or reason for the high price of coal. These royalties range from 12 cents to $1.50 per ton. Some are on a sliding scale, so that the higher the prices the higher the royalty. The largest lessor of coal lands has increased its royalty from 31 cents per ton in 1899 to $1.27 per ton in 1921. These royalties are paid under contracts which cannot be changed by legislation, and most of the contracts do not expire before December 31, 1928.

Relatively little royalty is paid by operators who own their own mines, as all of the ten railroad companies do. Royalties are relatively unimportant as an element in the production costs of the railroad coal companies. They are, however, important to the independent companies who pay royalties on about 70 per cent of the coal they mine. Much of the royalties paid by the independent companies goes into the pockets of the railroad companies.

In times of shortage many of the independents sell their coal at a premium well above the prevailing price.

At such times the royalty serves as a pretext for premium prices on all independent coal, while the premium in turn serves as a pretext for higher prices by all retailers of anthracite. There is no good reason why it should.

THE ANTHRACITE TAX

The legislature of 1921 levied a tax of one and one-half per cent on the value of each ton of anthracite at the mine. The repeal of this tax was before the Legislature of 1923 but failed to pass.

The value and tax per ton for 61 per cent of the production from July 31 to December 31, 1921 was as follows:

KIND OF COAL	AVERAGE REPORTED VALUE PER TON	TAX IN CENTS PER TON ON AVERAGE REPORTED VALUE
Unbroken	$7.50	$0.1125
Broken	7.35	.11025
Egg	7.43	.11145
Stove	7.77	.11655
Chestnut	7.61	.11415
Pea	5.38	.0807
Buckwheat	3.17	.04755
Rice	2.05	.03075
Barley	1.25	.01875
Culm	.81	.01215

The tax on a ton of coal as mined is about nine cents. When this nine cents was distributed by sizes, the tax for the 61 per cent varied from one to five cents on steam sizes and a little over 11 cents on domestic sizes.

Unless in time of scant supply, the prices actually paid before and after the tax went into effect do not indicate that it has been handed down to the consumer. In November of 1920, for example, the selling price of stove coal at the mines of one large company was $9.20 per ton. In November of 1921, after the tax was in effect, the price was exactly the same. For egg coal the price was also the same in November of both years, while the price of chestnut was 10 cents lower in November 1921 than it was in November 1920, and the price of pea coal was about 20 cents higher in November 1921.

In times of scant production the highest cost of coal may tend to fix the price, although the railroad companies have never increased their prices to meet it. But in times of ordinary production it is difficult to see how a few cents per ton can be added to the price when the selling price at the mine for three-fourths of the production is below the actual cost of operating the high cost mines. How can a tax of a little under or even a little over 12 cents per ton be passed on to the consumer when production costs actually vary from $4.25 to $10.25 per ton? It is also pertinent to compare the size of the tax per ton with the size of the dividends per ton heretofore described.

DISTRIBUTION COSTS

The recent report of the Federal Trade Commission points out the exorbitant profits made by wholesalers of anthracite coal. Before the war the customary wholesalers; gross margin on domestic sizes of anthracite was from 10 to 15 cents per ton, while during the war the Fuel Administration allowed 20 cents per ton east of Buffalo. This margin of 10 to 20 cents per ton

netted an average return on investment of from 12.5 per cent to 27.5 per cent. In the week ending October 13, 1923 wholesalers took margins reaching as high as $1.75 per gross ton (nearly twelve times average pre-war margins) and in the week ending October 30th margins reached as high as $1.50 per gross ton, about ten times the margins that the United States Coal Commission found netted 12.5 per cent to 27.5 per cent on the investment.

The gross margins of retail dealers in anthracite in Boston in November, 1922, ranged, according to the United States Coal Commission, from $4.07, to $6.22 per ton on stove sizes. The gross margins in New York City in the same month ranged from $2.50 to $4.51 per ton, and in Philadelphia from 90 cents to $5.25. In New England the margins ranged from 13 cents to $6.05. According to the reports of the retailers themselves, the margins usually ranged from 75 cents to $3.50 a ton, yet the price charged the consumer by different retailers was about the same, in any given city.

Is there a city anywhere whose range of prices at all corresponds with the range of margins? Did many retail dealers anywhere, who were making several fold more profit than their fellows, offer to increase their trade by reducing prices? Just how does it happen that the retail price got to be so uniform? Have several somebodies been talking things over together, or do the operators ration the coal to the retailers and so prevent price cutting?

The mining costs reported by the operators themselves for the first quarter of this year varied from $4.25 to $10.25 per ton, yet the sales prices quoted by the ten railroad companies were within a few cents of each other. Had any persons talked those prices over?

SUBSTITUTES AND FUEL ECONOMY

On August 1, 1923, there were in storage the usual amount of about 50,000,000 tons of bituminous coal, or sufficient to last for forty odd days of average consumption. It is, therefore, evident that bituminous coal could not furnish a substitute for anthracite throughout a prolonged strike or lock-out. Furthermore, many consumers can, with satisfaction, burn only anthracite in their home furnaces. Bituminous coal is not a remedy for prolonged strikes or lock-outs. The public must have anthracite.

There are, however, enough consumers who can use either anthracite or bituminous to exert great influence toward a fair price for anthracite in times of normal production. There are also possible economies in the use of anthracite by which consumers can lower their coal bills on the average by at least one-fifth. By the use of substitutes and by proper fuel economy consumers of anthracite now have in their hands a powerful means, when supported by the necessary legislation, of compelling fair treatment from a monopoly which will give fair treatment only when it is forced to do so.

CONCLUSION

Shortly after the settlement of the coal strike I took up the question of coal prices with members of the same operators' committee with which I had dealt in the settlement, and impressed upon them by every means in my power, both singly and in a group, and by public statement, the self-evident truth that the wise thing for them to do was to undertake the cleaning of their own house. To remedy existing abuses, suppress extortion, and give the public a square deal would, as I pointed out, go far to provide a rehabilitation

of the industry before the public, of which it stands greatly in need.

While carefully refraining from any attempt to prescribe in detail what the operators should do, I pointed out that their power over the whole industry, through their control of coal production, might well be made the means of insuring justice to the public.

Unfortunately, my appeal to the members of the committee for better conditions in the anthracite industry produced no result. On November 9th they finally declined to undertake the necessary house cleaning themselves. If they will not do what is needed, the people must do it for them. I do not doubt that they will.

APPENDIX

THE IMPORTANT PUBLIC STATEMENTS MADE DURING THE SETTLEMENT OF THE ANTHRACITE STRIKE, AUGUST 27–SEPTEMBER 8, 1923

I

THE DEMANDS OF THE MINE WORKERS AS ORIGINALLY PRESENTED TO THE OPERATORS BY THE MINE WORKERS' REPRESENTATIVES

1. We demand that the next contract be for a period of two years with complete recognition of the United Mine Workers of America, Districts 1, 7 and 9.

2. We demand that the contract wage scales shall be increased twenty (20) per cent; all day men shall be granted an increase of $2.00 per day; that the contract laborers increase now being paid by the operators shall be added to the contract rates; that the differential in cents per day between classifications of labor previous to the award of the United States Anthracite Coal Commission shall be restored.

3. We demand uniformity and equalization of all day rates and that skilled mechanics, such as carpenters, blacksmiths, etc., shall be paid the recognized standard rate existing in the region, which rates should not be less than ninety (90) cents per hour as a basis; and that engineers and pumpmen who do repair work on their engines and pumps shall be paid the mechanics rate quoted herein for this repair work, and that all day men shall be paid time and one-half for overtime and double time for Sundays and holidays.

4. We demand that the provisions of the eight-hour clause in the present agreement shall be applied to all persons working in or around the anthracite collieries coming under the jurisdiction of the U. M. W. of A., regardless of the occupation, and that in the bringing of these employes under the eight-hour day their basis shall be arrived at in the same manner as the basis was arrived at in the case of pumpmen and engineers, plus the increase demanded in Section 2 of this document; and further, that inside day labor shall work on the basis of straight eight hours underground.

5. We demand that where coal is paid for by the car it shall be changed and payment shall be made on the ton basis of 2,240 pounds and where dockage and penalties are now imposed for refuse that the amount of refuse to be permitted in any car shall be fixed by the mine committee and colliery officials in conformity with the agreement and that the present unreasonable penalties and dockage shall be abolished.

6. We demand a more liberal and satisfactory clause in the agreement covering the question of miners who encounter abnormal conditions in their working places and that to correct this situation the following quotation "Unless otherwise directed by the foreman," shall be stricken from the agreement covering this particular subject, and that the consideration rate of each colliery should be equivalent to the average daily earnings of contract miners under normal conditions and that for dead work performed by the contract miner he shall be paid this consideration rate.

7. We demand payment for all sheet iron, props, timber, forepolling, extra and abnormal shoveling, where such is not now paid for, and that jackhammers shall be supplied to miners free of charge and that company workers shall be supplied with tools free of charge.

8. We demand that a uniform rate of

twenty (20) cents per inch be paid for refuse in all kinds of mining up to ten feet wide and that the rate for blasting top and bottom rock shall not be less than thirty (30) cents per inch with the understanding that these rates are to be the minimum not affecting higher rates that exist.

9. We demand that after a grievance has been disposed of by the Conciliation Board and referred to the Umpire that the Umpire shall likewise render his decision within thirty (30) days, said decision to be based upon equity if requested by complainant.

10. We demand that the wage schedules be brought up to date containing all new rates and occupations and that mine committees shall be authorized to meet with company officials and agree upon rates for new work, before such work is commenced, and that such rates shall be added to the rate sheet and complete copies shall be supplied the committees and filed with the Board of Conciliation. Foregoing section to likewise apply to pillar work.

11. We demand that employes of stripping contractors be brought under the general agreement on their present basis of wages plus the increases demanded herein and that stripping locomotive engineers shall receive a rate equal to that of the shovel cranemen with extra payment for looking after their engines previous to starting time, at noon time, and after quitting time; and that the shovels and boilers to be assigned watchmen shall be restricted to a certain number to be determined upon between the contractors and the committee.

II

ADDRESS BY GOVERNOR PINCHOT AT THE OPENING MEETING OF THE CONFERENCE OF REPRESENTATIVES OF OPERATORS AND MINERS HELD AT HARRISBURG, MONDAY, AUGUST 27, 1923

As the representative of the Commonwealth of Pennsylvania, I have called you together for the purpose of finding a way to keep the anthracite mines in operation. I delayed asking you to meet here, after the negotiations at Atlantic City had failed, until I was assured that to do so would not run counter to the wishes of the Federal authorities. I am acting now solely in my capacity as Governor of Pennsylvania, and with the rights and interests of the people of Pennsylvania, and of the other anthracite-using states, clearly in mind.

This controversy between the miners and the operators of the anthracite field is not a private quarrel.

The general public is a party to this controversy, and its rights, as well as the rights of the two other parties, must be represented and recognized. A shortage of anthracite means not only a huge loss of profits to the operators—not only a huge loss of wages to the miners—but it means also loss of health among millions of American families, loss of comfort, of working power and of time.

Throughout the vast region where it is used, anthracite is the fuel burned in the homes of the people. A strike or suspension such as now threatens is a public calamity, and as such every reasonable public means must be used to prevent it.

The interest of the public in the settlement of this controversy is double. In the first place, the public wants it settled. It is utterly wrong that the people should be called upon again to bear the enormous and most oppressive burden of a shortage of anthracite coal.

In the second place, the public wants it settled on terms of even-handed justice. The right of the public to intervene carries with it the clear responsibility to see that impartial justice is done to both sides. In its desire to be served the public cannot afford to accept any settlement that is based upon anything less than justice. Furthermore, an unjust settlement cannot last. The people believe, and are right in believing, that the sufferings which come from one coal shortage after another are intolerable.

The Commonwealth of Pennsylvania has a responsibility to other anthracite-using states and to Canada which is second only to her responsibility for the safety and welfare of her own citizens. We have taught them to use our product. The prosperity of the region which produces anthracite comes largely from such use. Having taught them to expect and value our service, we cannot lightly disappoint them.

The country is just now entering upon a period of prosperity after a prolonged depression. The closing down of the anthracite mines would tend to undermine the confidence essential to a continuance of this prosperity.

Our railroad facilities are heavily taxed already. An uneven output of coal—how much and how little—will tend to block transportation; and the blocking of transportation will be almost as effective in making a coal shortage as closing the mines.

The public has not forgotten, and I

shall not forget, the rights and interests of the miners and the operators. Each side represents a great and vital service to the public. Moreover, each side stands in the presence of a great and vitally important duty to the people at large.

The public does not and cannot see with your eyes and appreciate with your experience the background and the details of the present controversy. But it knows the essential facts. I express a truth none will deny when I say that the anthracite-using people of the United States are losing patience, and I ask you to consider that fact with care.

The public interest demands that this controversy shall be settled, and that a suspension of mining shall be avoided. The thing is possible—and it must be done.

Settlement means that neither side can get everything it would like to have. Few people ever do in the world we live in. But the settlement of this dispute is absolutely necessary for the public safety and welfare. The public needs and must have coal, and I am entirely confident that the public is going to have it. It is my duty to insure to the public, by every lawful means at my command, the necessary supply of coal.

I recognize the right of mine workers to organize for their own protection, and to fair and decent conditions of living. I am fully aware that the strike is a right which should not be arbitrarily abridged or denied. The exercise of this right, however, should be made unnecessary by the use of orderly and reasonable methods of adjustment.

I recognize the right of mine operators to a just return on their investment and their managerial ability.

As the representative of the people of this Commonwealth, I am here to tell you that these rights are to be recognized and protected, and that the public rights are to be recognized and protected also.

The Roosevelt platform of 1912 asserted that "the public good comes first." Do not forget that the public cannot look with indifference upon unnecessary industrial conflict over private rights while it suffers in health, comfort, and the very essentials of life.

We are at the threshold of winter. I call your attention again to our duty to the public, yours as miners and operators, mine as executive of the only anthracite producing state.

The eleventh hour is upon us—and the crisis has now been reached. We must do in this eleventh hour what should have been done before. It can be done and must be done. There is still time. Let us use this time in an effective spirit of common counsel so that this common danger may pass, with due regard to the rights of all, and with due credit and honor to all concerned.

After the close of the present session I desire to consult with each side separately at as great length as the time available will permit.

I will meet first with the miners because they are, to use a legal phrase, the plaintiffs in this case; and I suggest 2:00 to 5:00 o'clock this afternoon as the time. Tomorrow morning from 9:00 to 12:00 I will meet the operators for a similar conference. Other conferences may be arranged later.

I propose to treat these conferences with each side as wholly confidential. What is said to me by one side will not be revealed to the other, either now or later, unless by mutual agreement. I ask, also, and I desire especially to impress upon you the necessity, that each side shall refrain until the end of this conference from making public its position on any issue here involved, thus affording the largest practicable opportunity for discussion and agreement. The urgency of the situation, together with the shortness of time available for agreement, justifies this request.

III

ADDRESS BY GOVERNOR PINCHOT AT JOINT CONFERENCE OF REPRESENTATIVES OF THE MINERS AND OPERATORS, HARRISBURG, AUGUST 29, 1923

My justification for proposing a basis upon which I believe this strike can be prevented with justice to all parties is threefold:

First, that this controversy has continued until all chance of agreement by direct negotiations between the miners and operators has been lost;

Second, that the interest of the miners, the operators, and the public all require that this controversy shall be settled without a strike;

Third, that the public is entitled to a voice in the discussion, and that the rights of the people generally deserve consideration, at least as much as those of the miners and the operators.

Under such circumstances, and in a case where the public welfare so urgently requires protection, the people have the clear and unquestionable right to demand a settlement.

Both miners and operators have laid the essential points of their positions fully before me. I have at hand the stores of information collected by the Pennsylvania Department of Mines and the Department of Labor and Industry, and I have consulted with many men representing the widest variety of knowledge and experience in the anthracite field. All the facts collected by the United States Coal Commission have been most generously placed at my disposal. Its principal experts have come to Harrisburg, and many other experts also, so that nearly all of the specialists in America who are best informed upon the facts concerned in the present controversy were assembled in the State Capitol.

Upon the basis of the information assembled from all these sources, with the profound belief that it affords a basis of settlement which is reasonable and just, which miners and operators alike may accept with credit and honor, and with the firm conviction that fairness to the anthracite-using people of America requires that it shall be accepted, I recommend the following basis of settlement, with the understanding that all questions concerning it or not covered by it shall be referred to the Joint Conference of Scale Committees, and that the Anthracite Conciliation Board shall determine any questions upon which the Joint Conference cannot agree.

1. Recognition of the basic eight-hour day for all employes. If longer hours are necessary at certain times, or in certain occupations, the overtime to be paid for at the eight-hour rate.

2. A uniform increase of ten per cent to all employes, this increase to take effect September 1st.

3. Full recognition of the union by the operators, without the check-off, but with the right to have a union representative present when the men are paid. I do not regard the question of the open or closed shop as at issue in this controversy.

4. Complete recognition of the principles of collective bargaining.

I suggest as a means of avoiding or settling differences that, if in the course of collective bargaining the Scale Committees of the miners and operators are unable to agree, they shall select a man agreeable to both sides to attend and take part in their discussions, but without a vote, and not as umpire or referee. If they are still unable to agree, their differences shall be referred to the Conciliation Board, which shall be provided with whatever equipment is necessary for the rendering of prompt decisions.

I am strongly of opinion that an agreement signed on the foregoing basis should cover not less than one year.

The whole body of wage rates in the anthracite field is antiquated, haphazard, and honeycombed with inequality. It needs revision. I suggest that the Anthracite Conciliation Board be authorized by the Joint Wage Scale Committees to undertake and complete within a year a thorough revision and for that purpose be supplied with the necessary help.

The proposed increase of ten per cent is recommended in view of the high degree of skill required among the miners, and the extra hazardous nature of the occupation. Five hundred workers are killed and twenty thousand are injured each year.

The ten per cent wage increase, according to the best figures available to me, will add sixty cents a ton to the cost of domestic sizes of anthracite coal at the mine. Of this amount not less than ten cents can be and ought to be absorbed by the operators without any increase of price. In the last three months of 1922 and the first three months of 1923 their profits have been greater than ever before in their history. But the extent to which these producing conditions will continue no one can now predict with confidence.

The remaining fifty cents per ton should not in the end be taken from the consumer. The whole of it can easily and properly be taken out of the cost of transportation and distribution.

Anthracite mines vary in the cost of producing coal. A very considerable percentage of the mines could bear at least half of the probable increase of sixty cents per ton and still run at a fair profit. Others, operating on a smaller margin, might be forced to close down if their cost of production were raised even by a much smaller amount. To decrease the margins at the mines more than ten cents per ton now might unduly reduce production. It is to the public interest that bins be filled for the winter and that factories continue to operate. When production is assured I intend to recommend constructive plans that will, I am confident, prevent any part of this increase of fifty cents a ton going to the consumer.

I believe the proposed settlement to be fair to all three parties to this controversy. It is fair to the miners, for it will notably improve their condition as to wages, hours,

and recognition of the union. It is fair to the operators, for it leaves them in position to continue running their mines, and to do so at a reasonable profit. It is fair to the public, for the public can better afford to get anthracite at a slight increase in price, if that cannot be avoided, than not to get anthracite at all. In particular, it leaves both miners and operators far better off than either would be if the contention of the other had been accepted.

I call the attention pointedly of both sides to the fact that neither miners nor operators, whether the strike goes on or whether it does not, can hope to have their own way fully in the end. Whether now or later, a compromise is inevitable. It is immensely to the advantage of each of the three parties in interest that the compromise shall be made before the enormous loss and suffering of a strike is undergone, rather than afterward.

I call your attention also to the evident fact that the poor will suffer most if this strike goes on.

In a time when public opinion is more powerful than ever before, you are in danger of establishing in the public mind not only a bitter and lasting resentment, but a strong desire to requite you for the sufferings a strike would bring upon the people. The public will utterly fail to see either reason, justice, or good citizenship in continued fighting against this proposed settlement, or over such minor differences as this proposed settlement leaves open.

It is fair to ask miners and operators alike to take time to consider this proposal. I do ask very earnestly that both sides will withhold the announcement of any conclusion until they meet with me again at noon on Friday next, that they will then give me their decisions, and that in the interval they will consider not only their own interests, but also their duty to the anthracite-using people of the United States.

IV

REPLY MADE BY OPERATORS' COMMITTEE AUGUST 31, 1923

HONORABLE GIFFORD PINCHOT, *Governor of Pennsylvania.*

Sir:

In response to the proposals made by you to the Joint Conference of Miners and Operators at Harrisburg, Pa., August 29th, 1923, we beg to submit the following:

With respect to your proposal No. 1:

"Recognition of the basic eight hour day for all employes. If longer hours are necessary at certain times, or in certain occupations, the overtime to be paid for at the eight-hour rate."

We agree to this proposal. It will add some $2,250,000.00 to the annual wage bill of the industry, or five cents per ton to the cost of the domestic sizes.

With respect to your proposal No. 2:

"A uniform increase of ten per cent to all employes, this increase to take effect September 1st."

This would add about $30,000,000.00 to the wage bill. We are still firmly of the opinion that no general increase in the wages of Anthracite Mine Workers at this time is justified, and are supported in this belief by the findings of the United States Coal Commission as follows:

"The earnings of full time workers . . . certainly permit the essential of a reasonable standard of living. Those who take full advantage of their opportunities to earn in the various occupations connected with the industry and are not handicapped by serious misfortune, need not suffer for shelter, food, clothing, or other decencies and comforts of life, even without supplementary earnings of wife and children."

Since you justify your proposed increase as a recompense for skill and hazard, we invite your attention to the fact that these factors have no application to a large part of the workers. As to those to whom they do apply, they have been stressed and considered in every negotiation and arbitration in the last twenty years and already find expression in the wage structure.

The present wages were fixed by the award of the Wilson Arbitration Commission in 1920, when they were increased 17 per cent in recognition of the high cost of living then prevailing. In spite of the decreased cost of living and decreased wage rates in other industries, the anthracite wages have been maintained at this peak. These rates afford earnings over 150% above pre-war earnings, as compared with an increased cost of living of about 62%.

Considering the foregoing any favorable consideration by us of your proposal for a ten per cent increase must be conditioned upon a durable agreement covering a period of years, with provision for the annual revision of wages on a sound economic basis. If the parties cannot agree upon the revision, such determination of wages shall be referred to such a commission as may be

specified in the agreement, no suspension to take place pending such determination.

You recognize that your proposed increase in wages will add 60c per ton to the cost of domestic coal. We estimate it would be a minimum of 75c, excluding the pea size. You acknowledge that most of this increase must be added to the price of coal at the mines. The amount of the increased price to the ultimate consumer will be determined by the ordinary course of economic laws, as statute laws forbid the operators or dealers from entering into any agreement as to prices.

You state that of an estimated increased production cost of 60c per ton, 50c can "easily and properly be taken out of the cost of transportation and distribution." The cost of transportation can only be reduced through the unpredictable action of the Interstate Commerce Commission; the cost of distribution can only be reduced through voluntary action of distributors. We do not see how such reduction can be assured by any private person or public official, and until these reductions are assured, the public will have to pay the cost of increased wages.

With respect to your proposal No. 3:

"Full recognition of the union by the operators, without the check-off, but with the right to have a union representative present when the men are paid. I do not regard the question of the open or closed shop as at issue in this controversy."

This proposal as we understand it, involves merely a continuance of existing practices, to which we assent.

There is already full recognition of the United Mine Workers of America as evidenced by the existing agreement between us. From your statement that you "do not regard the question of the open or closed shop as at issue," we assume that you have no intention of suggesting that the award of the Roosevelt Coal Commission of 1902, bearing upon this matter, should in anywise be changed. That award provides:

"That no person shall be refused employment, or in any way discriminated against, on account of membership or nonmembership in any labor organization; and that there shall be no discrimination against or interference with, any employe who is not a member of any labor organization by members of such organization."

In reply to your suggestion that the union have "the right to have a union representative present when the men are paid," we beg to state that this is an existing practice, and there is no objection to continuing the provision of the existing contract in this respect.

With respect to your proposal No. 4:

"Complete recognition of the principle of collective bargaining."

Complete collective bargaining, as we understand it, now exists throughout the industry whereby agreements are made periodically with the union. These agreements cover wages, and working conditions and further provide that all differences arising during the term of the agreement not otherwise adjusted shall be settled by the Board of Conciliation and Umpire.

We agree that this practice of collective bargaining shall continue.

In making this response to your proposals, we do so upon the understanding that the other demands of the miners presented at the Atlantic City Conferences, not heretofore agreed upon, shall be deemed abandoned.

In closing, permit us to repeat the thought that the public is now entitled to a complete and durable settlement. If, at this time, it is to be asked, even temporarily, to bear the burden of an uneconomic wage, it must be safeguarded against an early recurrence of this unfortunate situation, and must be assured that the principle of orderly adjudication is now receiving some recognition.

Respectfully submitted,

S. D. WARRINER,
Chairman.

V

REPLY OF MINERS' COMMITTEE, AUGUST 31, 1923

Representatives of the United Mine Workers herewith hand you their reply to the proposals submitted by you. We have given the matter the most careful analysis and profound consideration of which we are capable.

For purposes of identification we shall refer to your specific recommendations in the chronological order in which they occur.

1. The principle of the eight-hour working day as applied to all employes in the anthracite industry has always been agreed upon by the operators and the miners in joint conference. The details of the hourly and daily rates, affected by this change have also been worked out as affecting the maintenance men, and it may be logically assumed that similar satisfaction may be achieved in the adjustment of the rates of all other men affected.

2. Your suggestion for an increase of 10 per cent as affecting the contract miners is a step in the right direction, although not compensatory for the distinct service rendered by such men, and being insufficient to meet their needs. We also desire to call your attention to the fact that 55 per cent of these men employed in the anthracite industry are paid by the day. The application of a percentage increase to the multiplicity of rates in this classification is wholly unsatisfactory for two substantial reasons.

A percentage increase would widen the existing differential between the various classifications of labor and thus accentuate the existing inequalities of bitter complaint among the men affected.

A percentage increase also has the effect of giving to the lower paid worker a lesser increase in actual wages than is given to those who enjoy a higher rate. Experience has taught the necessity of translating percentage increases into an equivalent number of cents per day for application to the rates of those men who are thus employed.

The representatives of the mine workers therefore desire to impress you with the importance of this matter.

3. The mine workers regret your refusal to incorporate the check-off arrangement in your recommendations. The fact that your refusal is not amplified by any explanation, leaves us to assume that you did not, perhaps, have full information available on this subject. We desire consideration of the check-off for two reasons, viz., as a matter of convenience and economy in the maintenance of the organization and the administration of its affairs; to give greater stability to the joint wage agreement, and to insure the continuous observance of all contractual obligations in harmony with the recommendations of the United States Coal Commission.

Such a provision in the agreement does not in any manner add to the cost of the anthracite commodity. No valid objection can be made to the check-off, unless one persuades himself to believe that the extension of courtesy, constituting a convenience to the United Mine Workers of America, can be construed as a reprehensible act.

The mine workers' representatives do not request the check-off applied to any individual other than those who file a voluntary written order constituting a legal assignment for exercise of the privilege. We call your attention to the fact that in the bituminous mining fields of central and western Pennsylvania, approximately 100,000 mine workers enjoy this privilege thru their wage agreements with the bituminous operators.

For a quarter of a century this arrangement has existed in the bituminous districts where collective bargaining is recognized, and the anthracite mine workers are only requesting that equal recognition be accorded them as is given by other coal operators. May we not point out that important producers of anthracite, having operations in the bituminous districts, freely admit the virtue and permit the existence of the check-off arrangement in their soft coal mines while issuing fulmination against it in the anthracite territory?

This is particularly true as affecting the Susquehanna coal collieries, The Madeira Hill interests, The Glen-Alden Coal Company, and others, too. The Delaware & Hudson Railroad Company, which is one of the most important of the railroads producing anthracite, has organized its own company union among its own shop employes. Membership in the company union is compulsory among those accepting employment, and monthly membership dues are deducted from the employes' pay envelopes.

Such a provision in the agreement would not in any manner add to the cost of the anthracite commodity. No valid objection can be made to the check-off unless one persuades himself to believe that the extension of a courtesy, constituting a convenience to the United Mine Workers of America, can be construed as a reprehensible act.

Paradoxical as this may seem, representatives of the Delaware and Hudson Railroad Company are among the most virulent in their opposition to the mine workers' check-off arrangement. They pursue a Doctor Jekyll and Mr. Hyde labor policy in this respect, which engenders unrest and breeds discontent.

It is true also that practically all of the railroad systems of the country which are still resisting the shopmen's legitimate trade unions, have organized company labor unions among shop employes. These unions are organized and conducted solely in the interest of the railroad companies, and membership in them is made compulsory, and, through the instrumentality of the check-off the railroad companies have collected the monthly dues.

It will thus be recognized that the corporate foes of the United Mine Workers of America do not hesitate to utilize the check-off arrangement when it serves their partic-

ular aims, while at the same time they fulminate against the mine worker's request for consideration upon this point.

Representatives of the United Mine Workers of America, we feel that in the absence of a reasonable or valid objection to the check-off by the anthracite operators, we are entitled to recognition on this point.

4. We understand that your fourth recommendation, affecting the principle of collective bargaining, means that the anthracite operators would forego their practice of contracting with individual employes for service for less than the prescribed rates. We further understand that it means that the workers have an inherent right to exercise their voice and judgment, through representatives of their own choosing, upon matters affecting wages, hours of labor and conditions of employment.

With this recommendation we find ourselves in entire accord.

In consideration of the several matters, including the remaining number of eleven demands of the United Mine Workers, we feel that your action has paved the way to a reopening of joint wage negotiations between the anthracite operators and the representatives of the United Mine Workers. Such a conference could take your wage suggestions for contract miners as a basis, and by diligent application, probably could make substantial progress in working out a new arrangement.

We, accordingly, advise your excellency that the representatives of the United Mine Workers will hold themselves in readiness to enter such a joint conference at any time such a meeting can be arranged.

We note your further suggestions that, in the process of collective bargaining, both sides should select an individual to attend these meetings and take part in the discussions without a vote, and that in the event of failure to agree, all differences should be referred to the anthracite board of conciliation, which would result in ultimate decision by the umpire attached thereto.

Whether or not it was so intended, the language of your suggestion would imply that the mine workers should accept for future permanent arbitration major provisions on wage agreements. We believe that such an expression would be in conflict with the principles enunciated in your fourth recommendation, which grants the complete recognition of collective bargaining.

We scarcely feel that it is necessary, in any detailed form, to analyze our public recognized opposition to arbitration of the basic principles of wages, hours, working conditions and human relationship in the anthracite industry. Our position on this matter has been made known to the President of the United States, and from time to time has been restated to governmental agencies, including the United States Coal Commission.

The anthracite operators, on repeated occasions, have been advised formally of our attitude on this question. We find ourselves in harmony with your future suggestion that the anthracite board of conciliation be authorized to undertake and complete a further revision of the whole body of the wage rates in the anthracite region which you so aptly describe.

The representatives of the United Mine Workers will diligently coöperate in effectuating a revision which will eliminate the existing inequities.

VI

STATEMENT BY GOVERNOR PINCHOT, SEPTEMBER 2, 1923

The essential and encouraging fact is that the negotiations which yesterday were lagging are still going on. Both committees have suggested an adjournment for the purpose of more carefully considering the whole situation, including the four points of my recommendations. But since each committee will do so from the point of view of the interests of its own side, this seems to me like a good time for the people to consider their own interests also, and to make their will known through the fullest public discussion.

In these negotiations I have been representing the public and its necessity to get coal. To get coal we must find a common ground upon which miners and operators may meet and settle their differences, with some regard for the public right. That common ground, in my opinion, properly covers a wage increase and a slight temporary rise in the price of coal. The choice lies between that and the threatened shortage.

The public is the most numerous and the most important party to this controversy. Its rights are paramount. Its welfare is the first consideration. The health and welfare of the people are directly and most seriously threatened by the closing down of the mines.

The hardships of a coal shortage go far beyond discomfort. January, February, and March of 1923 were ordinary winter

months, but anthracite was lacking. During these three months six thousand more people died in Pennsylvania than in the same months of 1922, when anthracite was not lacking. These were deaths only. They do not represent the very large number who did not die, but who did suffer prolonged illness and physical injury. Our industries, also, suffered as did our people.

This is what happened in a normal season of winter weather in a state which consumes but ten per cent of the total tonnage of anthracite. What deaths and suffering took place outside of Pennsylvania from this same cause I can only surmise. It is worth remembering that there are said to be fifteen million customers for anthracite, by far the most of whom represent whole families. Those who depend upon anthracite coal for warmth, comfort, and health are more in number than all the people of many nations. Shall the need of these millions be disregarded?

Both committees have agreed to meet me again in Harrisburg on Wednesday, September 5th, at 2:00 P. M. I welcome this breathing space for the hard pressed leaders on both sides, and I urge them to use it in acquiring a realizing sense of the public point of view.

This is not a private quarrel. Neither miners nor operators have any right to disregard or overlook the public suffering which would follow a prolonged strike. The patience of the people is very near its end. We have seen it pushed beyond endurance before, and we have seen the results.

VII

STATEMENT BY GOVERNOR PINCHOT, SEPTEMBER 6, 1923

The four points upon which I recommended that the strike be settled are:

1. Recognition of the basic eight-hour day for all employes. If longer hours are necessary at certain times, or in certain occupations, the overtime to be paid for at the eight-hour rate.

2. A uniform increase of ten per cent to all employes, this increase to take effect September 1st.

3. Full recognition of the union by the operators, without the check-off, but with the right to have a union representative present when the men are paid. I do not regard the question of the open or closed shop as at issue in this controversy.

4. Complete recognition of the principles of collective bargaining.

These points are interpreted as follows:

Eight-hour day: Principle to be accepted for all workers. Cost to be in addition to the ten per cent wage increase. Rates to be determined as for maintenance men.

Wage increase: Ten per cent increase to all workers. No additional wage burden except under eight-hour clause.

Check off: No change.

Collective bargaining: Rates for new work, such as opening a new seam of coal, to be made collectively as between the Mine Committee and Company officials. Any disagreements to be adjusted in the manner now customary, and work to continue pending decision at rates which shall not be less than standard recognized rates paid for similar work under similar conditions in the mine in question, or adjacent mines. No contracts shall be made with individual employes at less than the prescribed customary rates, or not in keeping with customary practices.

Wage rates: The Anthracite Conciliation Board to be authorized by the Joint Wage Scale Committee to undertake and complete within a year a thorough study of all wage scales, and submit the same to the next Joint Conference. Provided that if the Anthracite Conciliation Board shall by unanimous vote recommend the adjustment of any inequities or inequalities in wage rates, such adjustment shall take effect at once.

The operators authorize me to say for them that they are in accord with the four points as thus interpreted and are prepared to accept them. In authorizing this statement the operators desire to have it understood that they do so on condition that the terms as to the open and closed shop laid down in the Roosevelt award shall run with any new contract to be based upon the four points.

The miners authorize me to say that they are in accord with and prepared to accept certain of the four points as interpreted above, but that they are not yet prepared to give up their demand for the check-off, or for an additional increase of pay to day men in excess of ten per cent. In authorizing me to express their acceptance of the provision respecting collective bargaining as interpreted above, the miners desire to have it understood that they do so on condition that the words "such as opening a new seam of coal" shall not be construed as excluding pillar work.

At my suggestion the miners will take further time to consider this matter, and

both sides will return for further conference at three P. M. tomorrow afternoon.

VIII

THE FINAL AGREEMENT

This agreement made this 19th day of September, 1923, between Districts 1, 7 and 9, United Mine Workers of America, parties of the first part, and the Anthracite Operators, parties of the second part, covering wages and conditions of employment in the Anthracite coal fields of Pennsylvania, *witnesseth:*

The terms and provisions of the Award of the Anthracite Coal Strike Commission and subsequent agreements made in modification thereof, or supplemental thereto, as well as the rulings and decisions of the Board of Conciliation, are hereby ratified, confirmed and continued for a further period of two years ending August 31, 1925, except in the following particulars, to wit:

1. The contract rates at each colliery shall be increased ten per cent over and above the rates established under the Award of the United States Anthracite Coal Commission in 1920.

2. The hourly, daily or monthly rates of outside and inside company men, working on the basis of an eight-hour day, shall be increased ten per cent over and above the rates established under the Award of the United States Anthracite Coal Commission in 1920.

3. The hourly, daily or monthly rates of pumpmen and engineers formerly working a twelve-hour cross shift and changed to an eight-hour basis under the Award of the United States Anthracite Coal Commission in 1920, shall be increased ten per cent over and above the rates established by the Board of Conciliation in conformity with said Award.

4. The hourly or daily rates of consideration miners and consideration miners' laborers shall be increased ten per cent over and above the rates established under the Award of the United States Anthracite Coal Commission in 1920.

5. The rates paid contract miners' laborers shall be increased ten per cent over and above the rates established under the Award of the United States Anthracite Coal Commission in 1920, said increase to be paid by the operator and miner by adding ten per cent to the portion of the rate now assumed by each.

6. Outside and inside company men working on the basis of a day in excess of ten hours, shall be placed on the basis of an eight-hour day. The rate of pay for an eight-hour day shall be adjusted in the same manner as rates were adjusted for hoisting engineers and pumpmen who were changed from a twelve-hour day to an eight-hour day in 1920, subject to the same increase of ten per cent provided for other company men under Clause 2 hereof.

7. Outside and inside company men working on the basis of a nine or ten-hour day shall be placed on the basis of an eight-hour day. The rates of pay for the eight-hour day shall be the rates for the nine or ten-hour day paid under the agreement of 1916, plus $1.80 per day for outside employes and $2.00 per day for inside employes, plus seventeen per cent and subject to the same increase of ten per cent provided for other company men under Clause 2 hereof.

8. Monthly men coming under the agreement of September 2, 1920, and working on a basis in excess of eight hours per day, shall be placed on the basis of an eight-hour day. The monthly rates for the eight-hour basis shall be the monthly rates paid under the agreement of May 5, 1916, plus $54.00 per calendar month for outside employes, and $60.00 per calendar month for inside employes, plus seventeen per cent (except where modified by ruling of the Board of Conciliation) and subject to the same increase of ten per cent provided for other company men under Clause 2 hereof.

9. The colliery rate sheets of the different collieries shall be brought up to date; shall be signed by the company officials and the mine committees; and shall then be filed with the Board of Conciliation. In case of dispute as to the correctness of any rate, the rate shall be determined by the Board after hearing. In such cases, the burden of proof shall rest with the party taking exception to the filed rate.

10. A grievance referred to the Board of Conciliation shall be answered within 15 days and shall be heard within 30 days from date of filing with the Board. Decision shall be rendered by the Board, or case shall be referred to an Umpire, within 30 days after hearing. In case of reference to an Umpire, the decision of said Umpire shall be rendered within 30 days from date of reference.

11. Rates for new work, such as opening a new seam of coal, shall be made collectively as between the mine committee and company officials on the basis of the stand-

ard recognized rates paid for similar work under similar conditions in the mine in question or adjacent mines. In case of disagreement the matter shall be adjusted through the Board of Conciliation in the manner now customary. Pending decision by the Board, work shall proceed at rates set by the foreman and which shall not be less than the standard recognized rates aforesaid. No contracts shall be made with individual employes at less than the prescribed scale rates or not in keeping with customary practices. This section shall not be construed to deny to the operator the right to change the method of mining.

12. The Board of Conciliation is hereby authorized to undertake and complete a thorough study of all wage scales before the expiration of this contract and submit the same to the next Joint Conference. If the Board of Conciliation shall, by unanimous vote, recommend the adjustment of any inequities or inequalities in wage rates during such study, the adjustment shall take effect on a date set by the Board.

In witness whereof the parties hereto, through their accredited representatives, have caused this agreement to be properly executed, the day and year first above written.[1]

On behalf of Anthracite Operators:

WILLIAM W. INGLIS
S. D. WARRINER
W. J. RICHARDS
A. B. JESSUP

On behalf of Districts 1, 7 and 9, United Mine Workers of America:

RINALDO CAPPELLINI
President, District No. 1
THOMAS KENNEDY
President, District No. 7
C. J. GOLDEN
President, District No. 9
JOHN L. LEWIS
President, United Mine Workers of America
PHILIP MURRAY
Vice-President, United Mine Workers of America

Attest:
JAMES A. GONNAN,
Secretary.

[1] The above agreement, though formally signed on September 19, was actually reached and signed in Memorandum form on September 8 in the Governor's office at Harrisburg.—THE EDITOR.

IX

THE PROPOSALS AS TO REGULATION AND LEGISLATION MADE BY GOVERNOR PINCHOT AT THE CONFERENCE OF GOVERNORS IN HARRISBURG ON NOVEMBER 26, 1923

The purposes of regulation are to assure to all anthracite consumers: first, a fair price; second, clean coal; and third, a fair share of the coal available in time of scarcity. Regulation should also set and enforce standard sizes for anthracite, so that coal may be economically produced and used, and so that those who buy may get what they pay for. Finally, it should assure fair treatment to miners, operators, and consumers alike. Three kinds of regulation are proposed.

The First Thing to Do

The first is for state executives to use the power they have now. Under it they can do much to assure clean coal by publicity as to fraudulent practices. They can ascertain and tell the people what extortions are being practiced, and by whom. They can give information as to fuel economy and as to substitutes. They can act jointly, by appeal to the Interstate Commerce Commission, in securing adequate consideration of anthracite freight rates.

Pennsylvania's Share

As a part of what Pennsylvania can do, it has been urged that she should repeal her tax on anthracite, repeal the certification law under which only qualified men can mine anthracite, abolish royalties, and prevent the sale of unclean coal.

Pennsylvania has already vigorously attacked the problem of rock and dirt in anthracite and is making public the names of operators who are guilty. The effect has already been strongly felt. We shall continue to keep after the adulterators with vigorous publicity of the facts.

Royalties are matters of private contract between individuals. They are wholly unreachable by legislation while they are effective, and most of those now in effect will continue so until December 30, 1928. Moreover, two-thirds of the anthracite mined pays no royalty whatever, and this two-thirds includes the lower priced company coal.

As to certification of miners, nothing could be more foolish than to open the anthracite mines to unskilled mining,

The natural result of such action would be, first, either a complete stoppage of production, or at the least a huge reduction in the amount of coal produced; second, permanent injury to the productive capacity of the mines; third, a vast increase in accidents in an industry which already kills 500 men a year and injures more than 20,000.

The certification law is a just and proper law. It should not be repealed. That it creates no monopoly of labor is proved by the fact that 20,000 uncertified miners' laborers now at work are either eligible for certification or are qualifying for it.

The Pennsylvania anthracite tax amounts to 1½ per cent on the cost of the coal at the mine, or on domestic sizes between 11 and 12 cents per ton. The domestic consumer pays more dollars for his coal than the state takes cents for its tax. In other words, less than one cent in every dollar paid for anthracite by the householder would be due to the tax, even if the tax were passed on to him, which actual prices at the mines before and after the tax went into effect indicate that it is not. If the anthracite tax were repealed the companies which pay it now would naturally and properly become subject to the flat net income tax now levied on all corporations which do not pay special taxes, in which case the amount and effect of the tax would be about the same.

The Pennsylvania tax on anthracite follows precedents set in other states. It is a just and proper tax on wealth taken permanently out of the state, it is wholly insignificant in comparison with the huge profits made in anthracite, and I am emphatically against its repeal. There is no more reason why Pennsylvania should exempt her anthracite operators from taxation in order to supply Massachusetts, for example, with coal at a problematical reduction of twelve cents per ton than there is why Massachusetts should exempt her shoe manufacturers from taxation in order to supply Pennsylvania with cheaper shoes.

Do not misunderstand me. Pennsylvania recognizes the obligations which belong to her as the only anthracite-producing state. She is prepared to do her full share toward reducing the price. But in doing so she must, in order to act wisely, keep her eyes open to the facts and what they mean.

The Second Thing to Do

The next way of securing honest coal at decent prices to the consumer is by Federal action. Nine-tenths of the anthracite mined in Pennsylvania is consumed elsewhere. Thirty-one states use anthracite in quantities of a thousand tons or more. Anthracite is an interstate commodity. Therefore the action of no one state, not even of Pennsylvania, can meet the situation. Federal or joint action is required.

There are certain things the Federal Government can do. Among these are: to establish and enforce in interstate commerce standards for clean coal and for sizes; to license all who are engaged in interstate trade in anthracite; to authorize the Interstate Commerce Commission to deny cars to profiteers; and to investigate and publish the facts.

I believe, however, that the Federal Government can do still more. To paraphrase the language of the Supreme Court in the Kansas Industrial Court decision, the anthracite industry supplies an indispensable service, and in the absence of regulation the prices the people are subjected by it to "exorbitant and arbitrary control." That being so, it is affected with a public interest and may be regulated. In that case Congress may authorize whatever body it may select to fix prices of anthracite coal in interstate commerce, establish uniform systems of accounts, examine books and records, and make its findings known.

The Third Thing to Do

The best legal opinion does not establish beyond controversy the right of the United States to fix prices, establish uniform accounts, examine books, or require reports in the anthracite industry. But there is no doubt whatever that each state, through its police power, can do all of these things if it chooses. Whether the coming Congress can or cannot, does or does not, give the consumer clean anthracite at reasonable prices, there is another necessary remedy. I refer to the treaty or compact between the states authorized by the Federal Constitution.

If the anthracite-using states will, under this Constitutional provision, agree among themselves upon the form of regulation which will best work to the advantage of their people, a compact to establish a joint commission to enforce it will be both lawful and effective when approved by the Congress of the United States. Such a commission, pooling the police powers of the states concerned, could, in coöperation with Federal authority over interstate com-

merce, completely regulate the whole industry from the mine to the consumers' bin. We have here a powerful weapon altogether capable of securing justice for the consumer in all the anthracite-using states.

We know that the consumer of anthracite is suffering from extortion. The question before us is not whether he shall be freed from it, but how. I believe the suggestions I have laid before you point the way to definite results. Again I ask for joint action by the anthracite-using states in the task of assuring justice to the consumer, a task which no one state can perform alone, but in which the active coöperation of all will make certain of success. Together, but not singly, we can finish this job if we choose. There is nothing our people more earnestly want done.

Anthracite is an interstate question. Pennsylvania alone cannot legislate for nor assure justice to the nine consumers out of every ten who live beyond her borders. It is a problem for common action in which, if success be desired, each anthracite-consuming state must take its full and proper part.

The Effect of Competitive Conditions on Labor Relations in Coal Mining[1]

By F. G. Tryon
United States Geological Survey

WITH one exception—during the period of the war—the shortages in coal supply experienced by the country during the last few years have been associated with stoppage of work at the mines. To say this is not to lay the blame upon either management or men but merely to indicate the immediate cause of the crisis in supply. The cause may further be narrowed to general suspensions or strikes arising over the negotiation of new wage agreements. Only stoppages involving many fields affect to any material degree the total amount of coal available. Petty strikes and even district strikes, whatever they may signify to the student of industrial relations, do not create a shortage of coal.

The influences that affect the making of agreements are of diverse kinds. The hopes and fears and friendships and hates of men, personalities and politics within the groups of operators or the miners' union, experiences with past negotiations, loyalty to group interest and institutions, the character of the existing machinery of adjustment and of negotiation—all these may have a controlling influence on the reaching of an agreement. This paper is addressed to a different set of influences—to those competitive factors of the market that control the bargaining strength of either side and the ability of the employer to pay the wage, factors that are not always observed but that necessarily influence the results.

The reference throughout is to bituminous coal except where anthracite is specifically mentioned.

In the mining of coal, both anthracite and bituminous, the labor cost is the principal item of expense. For the country as a whole, 70 per cent of the cost of anthracite and 70 to 80 per cent of the cost of bituminous coal may be set down to labor. The most important single element in the competitive standing of a field or of an individual operator is therefore the labor cost—in other words, the wage rate.

Competition of Substitutes Unimportant

Were all operators in the country paying the same wage, or a wage adjusted to some basic wage with due regard to local conditions, there would be little question of the ability of the industry to pay liberal wages. Coal is a necessity of life, the demand for which is highly inelastic. The needs of consumers may fluctuate with the times, but these fluctuations are due to the ebb and flow of general prosperity rather than to changes in the price of coal. In 1920, when the price was the highest on record, the American people bought more bituminous coal than in any year before with one exception; and they bought it in large amounts, simply for storage. In 1921, when millions of tons were sold at the bare operating cost of production, no cut in price could induce the American people to buy more than they needed. Not only is coal a necessity, but it is a necessity for which no substitute can be provided on a large scale. We can-

[1] Published by permission of the Director, United States Geological Survey.

not cut fire wood enough to make a perceptible difference in the country's fuel supply and the present consumption of fuel oil is equivalent to but a small fraction of the total consumption of coal.

Periodic recurrences of what the coal man calls "the fuel-oil menace" have seriously affected the markets of the mines of the Southwest and of the state of Washington, but they have never been a significant factor in the negotiations of the Central Competitive Field. If coal prices were generally reduced to meet the competition of fuel oil, the principal effect would be a corresponding reduction in the price of fuel oil. Rising prices of coal no doubt tend to make consumers more careful in its use and have encouraged the development of water power, but any such adjustments of demand to price are gradual, and their results are registered not in a decrease in the demand but in a slowing up of the normal rate of increase. Even the last increase in the price of anthracite, which now sells in the city of Washington for $16.35 a long ton, has not prevented the market from absorbing quickly the whole output at as heavy a rate of production as has ever been attained by the industry. Independent coal still brings high premiums at the mines, and whatever the future may hold there is yet no sign of decline in price nor shrinkage in the profit of the operator.

COMPETITION OF FOREIGN COAL UNIMPORTANT

Furthermore, the market for American coal is a self-sufficient market, relatively unaffected by prices in other countries. Our imports are negligible and come chiefly from Canada, a country where most of the miners belong to the same union and work under wage agreements negotiated by the United Mine Workers of America. Rumors have twice been circulated of an understanding between the British and American miners looking to mutual assistance in the event of a strike. Upon this point the Department of Justice may have evidence, but to an outsider looking only at the coal market, there are two bits of contradicting evidence—first, that during the strikes in the United States of 1919 and 1922, British coal *was* exported to our north Atlantic ports in such quantities as shipping could be found to transport, quantities quite insignificant to give more than local relief; and second, that the American miners' union would be quite unable to deliver on a promise to hold up the export of coal during a strike of British miners. It so happens that the fields normally supplying coal for export are now running non-union. No action by the miners' union short of a general suspension of all the mines sufficient to force an embargo on exports by government decree could prevent the movement of coal abroad. So much for a rumor that gives too little consideration to the shrewdness of either American or English miners to have much foundation in fact. The important point to note about the export trade of the United States is that aside from the heavy shipments to Canada, which meet no more severe competition than coal sold at home, exports form an insignificant part of the total coal business of the country. To some shippers in certain fields of the Appalachians they are indeed important, but in normal times they amount to only 1 or 2 per cent of the country's total coal business.

Because of the absence of effective competition from foreign coal or other fuels, the price of American coal might advance considerably without serious curtailment of demand, and if the labor costs of different operators were uni-

form, wage rates might be increased within a considerable range without exceeding the industry's ability to pay.

COMPETITION AMONG AMERICAN PRODUCERS

This inherent quality of inelastic demand, however, greatly circumscribes the ability of the operator to pay under the actual conditions of the American bituminous market. It is commonly known that the soft-coal industry is greatly overdeveloped. Against a demand of approximately 550,000,000 tons a year the mines have a demonstrated capacity with their present labor force of over 900,000,000 tons. In the boom year of 1920 they worked on the average of 220 days and were idle 88 possible working days. Excess capacity, we are coming to realize, is characteristic of many American industries, but few of them are so heavily overequipped and overmanned as is the mining of bituminous coal. There is nothing new about this condition, for the average time worked annually in the bituminous mines for the last 30 years is 215 days, though overdevelopment seems to be rather more acute since the war. The natural consequence of overdevelopment is a tendency to overproduction. Prices may fall so low as to yield no profit over cost as properly computed, including depreciation and depletion, yet the operator may be driven to produce if he can sell at anything above the bare operating cost. The result, whenever the market is depressed, is a tendency to cut wages, and the evidence is unmistakable that before the advent of the United Mine Workers such sweatshop competition had reduced wages to a very low level and the standard of living among coal miners was correspondingly low. Many of the coal fields were staked out before the railway net of the country was well defined and the rapid increase in railroad mileage of the seventies and eighties threw into competition mines which might never have been opened had our present railroad facilities been available from the start. The result was a period of price cutting and with it the cutting of wages in which no one profited because there was no end to the process.

The first attempt to stabilize wages on a large scale was the Columbus Agreement of 1886, made by representatives from Illinois, Indiana, Ohio, western Pennsylvania and West Virginia just as the country was emerging from the depression of 1883–1885. The gains made during the years of relative prosperity in the late eighties were lost in the panic of 1893.

The successive reductions in the Hocking Valley mining rate from 70 cents a ton in 1892 to 45 cents in 1896 register the price war and wage war that was going on. Chaos resulted; and yet the market failed to improve. Reductions in one district provoked sweeping reductions in other districts. Not infrequently an operator went out to get business and offered a price which could be reached only if he cut the rate. He went back and persuaded the men to take a cut; then his neighbor across the creek was compelled to make a more drastic cut. This process brought no more employment to miners as a whole and reduced wages below the proper level of subsistence. A call for a general suspension issued by the United Mine Workers in 1894 met with the widest response, even in fields where they had no members. Further reductions in prices and wages followed, and the unrest and dissatisfaction among the miners culminated in the great strike of 1897—one of the landmarks in the annals of American mining.

It was out of this bitter and futile experience of low profits, low wages,

and strikes that the present system of collective bargaining through wage agreements signed by miners and operators of four states was born. Representatives from Ohio, Indiana, Illinois and western Pennsylvania—the "Central Competitive Field"—signed an agreement establishing a uniform day rate, an eight-hour day, and standard tonnage rates with local differentials, over the entire field. This agreement, signed in 1898, came, like the earlier Columbus agreement of 1886, on a wave of prosperity that followed a period of depression. But whereas the earlier attempt had broken down as one district after another withdrew or as individual operators refused to maintain the scale, the agreement of 1898 was enforced—partly through the general realization by both sides that the conditions existing before were intolerable; partly, be it said, because the inclusion of the check-off in the district contracts so strengthened the union that it could enforce the agreement. The first year of the new agreement did not pass without strikes in several districts where certain operators refused to pay the scale and two of the strikes, at Virden and Pana, Illinois, resulted in bloodshed. The interstate agreement was renewed in 1899 and has been renewed at intervals since, though in certain years local agreements made independently by the several districts have taken its place.

COMPETITION BETWEEN FIELDS

The interstate agreement of the Central Competitive Field did not, however, eliminate the cutting of wage rates. It transferred to a different plane the old competition in rates. The new plane of competition lay between union and non-union fields.

Bituminous coal is mined in 26 states and in ninety or a hundred commercial districts. The coal of each district varies in quality and in value. Not every coal will meet all purposes, even in emergencies, but there is sufficient play of substitution to make each coal a potential competitor of every other coal, and therefore changes in the price of one directly or indirectly affect the price of all the others. Just as between individual shippers, so between fields the competition is intense. The state of Indiana, for example, mines some 25,000,000 tons in five commercial districts. This tonnage is approximately equal to the annual requirements of the state, but instead of being used within Indiana alone, about 7,000,000 tons are shipped to eleven other states, some as far away as the Dakotas. Another 7,000,000 tons of Indiana coal is delivered to railroads to be used in and out of the State of origin. Besides the Indiana coal that is used in the state an equivalent tonnage is imported from some eleven other broad commercial districts. Coals from Illinois, Ohio, Pennsylvania, Kentucky, West Virginia, Virginia and Tennessee compete with Indiana coal and with each other in Indiana markets.

Again, in New England coal from central Pennsylvania shipped all-rail across the Hudson competes with coal from the mountains of West Virginia carried by rail to Hampton Roads, thence by coastwise vessel to Boston, and thence perhaps, inland by rail again. An extreme example of competition from many districts is found in southern Minnesota. To this market Illinois and Indiana ship heavily by rail. A dozen fields of Ohio, Pennsylvania and West Virginia ship by rail to the Lakes and then by vessel to the head of Lake Superior and Lake Michigan, there to be unloaded on the docks and then sent inland by rail again. Other Appalachian coal, perhaps from the same fields, moves up through lower Michigan and across Lake Michigan by

car ferry to Manitowoc and Milwaukee and thence inland. Still other consignments of Appalachian coal find their way into this territory all-rail through the Chicago gateway. Occasionally a car of Arkansas anthracite makes its way into this market, and under certain unusual conditions the far-away shippers of Wyoming enter this market. Clearly where competition is so nicely adjusted, any change in freight rates, or more notably, in labor cost, will push the sale of one coal at the expense of another. It was therefore not surprising that immediately after the creation of the Central Competitive Field, as wages advanced, the competitive pressure of non-union coal from territory south of the Ohio made itself felt more strongly than ever, and both parties to the wage agreement realized that unless rates in the outlying fields were brought into line the agreement could not be maintained.

GEOGRAPHIC RELATION OF UNION AND NON-UNION FIELDS

To get a bird's-eye view of the fields, imagine a central mass of union territory surrounded by what I have elsewhere called a "broken crescent" of non-unionism. The heart of the union region is the Central Competitive Field, extending from Pittsburgh on the east to Illinois on the west. Just west of the Mississippi is another union stronghold, comprising the states of Oklahoma, Arkansas, Missouri and Kansas, collectively known as the Southwest Interstate Field. To the east of the Central Competitive Field lies central Pennsylvania, which is largely organized and second in membership only to Illinois among the union districts. Other undisputed union territory includes Michigan, Iowa, Wyoming, Montana, North Dakota and, recently, western Kentucky. Around this center of unionism extends the non-union crescent. The right horn of the crescent thrusts itself northward into the Connellsville and adjacent districts of Pennsylvania, runs down along the Appalachians through the Virginias, eastern Kentucky, Tennessee and Alabama, and thence extends with breaks to Texas and up into the southern Rockies, across New Mexico, part of Colorado, and Utah. From there the non-union crescent takes another long jump to Washington where, since 1921, half of the mines have been running open-shop. It will be noted that the open country of the North and Middle West, close to centers of population and other kinds of industry where communication is easy and the idea of trade unionism is already well established in other lines of business, is practically all union territory. The isolated mountainous region from West Virginia south to Alabama and much of the southern Rockies is non-union. To this broad statement certain exceptions must be taken. The industrialized Connellsville region and the Westmoreland, Somerset, and Butler-Mercer districts of Pennsylvania are non-union. On the other hand, since 1902 the union has had a foothold in the Kanawha Valley, the broadest and the most accessible of the natural highways through the mountains of West Virginia, and from a much earlier date organizations of miners affiliated with the United Mine Workers have existed in southeastern Kentucky and Tennessee. Even in Alabama the union from time to time has developed a considerable membership and has even attempted to win recognition through repeated strikes.

COMPETITIVE ADVANTAGES OF UNION AND NON-UNION FIELDS

The union fields generally possess the advantage of location. They are closer to the market and therefore enjoy a

certain protection in the shape of lower freight rates—an advantage that is largely offset, however, by the lower ton-mile rate on coal from the more distant non-union mines.

The non-union fields have on the whole better coal. Before the war they paid lower wages and therefore enjoyed lower labor costs. They have the very great advantage of steady operation while the union fields are on strike, and, not least important, they operate with a flexible wage scale that can be adjusted to the needs of the market—advanced when labor is scarce and cut in times of depression.

SHIFTS IN BUSINESS FROM UNION TO NON-UNION FIELDS, 1898–1914

That these advantages were effective in promoting the growth of the non-union mines at the expense of the union mines may be seen by comparing the relative position of the two groups in 1898 and in 1914. Whereas, during this period, southern Ohio declined notably in relative importance among the fields of the Appalachians competing in western markets and whereas the Pittsburgh district also lost in relative standing, shipments from northern West Virginia increased, the non-union regions of eastern Kentucky were developed with extraordinary rapidity, and an entire new field—Logan County, West Virginia, coming into first production in 1905—had taken rank as one of the most productive districts of the country by 1914. Twenty years ago the coals of Hocking Valley, Fairmont, Pittsburgh and eastern Ohio were regularly quoted on the Chicago market. Today Pittsburgh has entirely disappeared from the Chicago market and the other coals mentioned are represented only by occasional shipments. In 1898, 86 per cent of the coal shipped up the Lakes originated in the union districts of Pittsburgh and Ohio. In 1913 their share had dropped to 67 per cent. In 1898 southern West Virginia shipped to the Lakes only 40,000 tons, or less than 1 per cent of the total. In 1913 its contribution ran over 6,000,000 tons, or 23 per cent of the total. Non-union eastern Kentucky first broke into the Lake trade in 1909, with shipments of 7,000 tons; since then, its share has increased by leaps and bounds until in 1921 the district supplied 2,600,000 tons.

Not all of these shifts in production are due to the labor policy of the non-union fields. In part, they represent the natural rapid growth of young districts as opposed to the stationary or even declining production of districts where the available coal had been thoroughly staked out years ago, as, for example, southern Ohio. In large part, also, the union Appalachian coal from the Chicago market was displaced not by non-union coal, but by coal from the rapidly developing union field of southern Illinois, which has grown at a prodigious rate, exceeded by few other districts of the country. And, finally, part of the apparent displacement is due to the completion of through railroad routes, across the southern mountains—and to the extremely favorable freight rates offered by these long-haul carriers to stimulate traffic. With due allowance for these other factors, however, it is still true that the non-union fields have been greatly encouraged by the mere fact that they could keep their labor cost below the costs of the union shippers and that they were free to operate during strikes.

DIFFICULTY IN MAKING WAGE AGREEMENT, 1900–1914

These figures offer mute testimony to the silent pressure of non-union coal upon the business of the organized

fields. Further evidence is offered by the difficulty experienced in renewing the wage agreement: Collective bargaining had taken the form of rigid two-year contracts expiring March 31 of the even years. The period between the termination of one agreement and the negotiation of another was uniformly a period of stress. From 1900 to 1912 the wage rates of the union fields were advanced by approximately 25 per cent, an increase not at all disproportionate to the changes in the cost of living.[2] Yet these increases—13 per cent in 1903, 6 per cent in 1906 (in reality a restoration of a cut made in 1904), 6 per cent in 1910, and 5 per cent in 1912—were made only after a formidable demonstration by the union—a suspension of work. So true to type did these suspensions in the even years run that the story of one will serve for the story of all. They began with the formulation of demands in the biennial convention of the union, astutely timed to fall in "even" years—years marked by national elections. This was followed in regular order by resistance of the operators to an increase, apprehension of buyers over an interruption of supply, active buying to accumulate reserve stocks, advance in price, then idleness at the mines for one, two, three months or longer. The early weeks of a suspension were frequently marked by a slackening of demand; then as consumers began to exhaust their stocks the price again rose, inducing the importation of coal from the outside. Pressure of consumers to bring about a settlement appeared; sometimes it was exerted directly, where the railroads owned mines to supply locomotive fuel; sometimes it was exerted indirectly, through the usual channels of distribution. The union operator was moved to grant the miners' demand—first, by the spectacle of other coals, sometimes from a union district that had made an early settlement with the union, invading his own territory, and second, by the desire to participate in the active market and obtain the attractive prices created by the temporary shortage. The suspension was followed by a period of artificial prosperity, and higher spot prices assisted the operators to pay the increased scale, even in the face of non-union competition. Then followed a sagging market, dullness and distress.

Always it was the consumer who paid the increased price attending the suspension, but it must be said that in those days he did not pay very much of an increase. It is astonishing to note how little evidence of serious inconvenience appears in contemporary records of even the strike of 1910, when the union miners in five states were out for nearly five months. The price might rise 25 cents, 50 cents, rarely 75 cents or a dollar a ton, on coal for spot delivery—increases that seem small enough to the jaded palate of the market of today.

When the wage agreement expired in years of business depression, as in 1904, 1908 and 1914, the miners commonly did not press for an increase in rates. In fact, in 1904, under the leadership of John Mitchell, they accepted voluntarily a cut of 5 per cent, the only reduction applying to the union fields as a whole in the history of the present organization. This reduction is regarded more as testimony to the leadership of John Mitchell than as a precedent to be followed in later years. As the miners say, "Nobody but John Mitchell could have done it, and even he admitted it was a mistake afterward." Even in these years of depression, when no increase was asked,

[2] Bureau of Labor Statistics index of wholesale prices rose from 81 in 1900 to 99 in 1912, an increase of 22 per cent.

however, difficulty was experienced in renewing the agreement. The difficulty created in the first place by the dullness of the market was heightened by the ability of the non-union shippers to reduce wages and undercut the price. That the shippers of eastern Kentucky and West Virginia availed themselves of this advantage during the depressions of 1904–5 and 1908–9 is apparent from the trend of prices. In 1902 and 1903, for example, the average sales realization for coal mined in West Virginia was $1.01 and $1.17 a ton, respectively, a high figure representing active demand associated with the great anthracite strike of 1902. In the depression of 1904 the price dropped to 88 cents and the following year it fell to 68 cents. Then, in the active year 1907, the average value of West Virginia coal was 99 cents a ton f.o.b. mines. In the depression of 1908 and 1909 it declined to 95 cents and 86 cents, respectively. At a time when the operator's profit per ton was measured in nickels, if not in cents, such a decrease meant a sharp reduction in the wage rate.

The condition of the industry in 1914, the last year before the beginning of the war boom, was unsound. The union operators were weak and were divided among themselves. Twenty-five per cent of the tonnage of Illinois was in bankruptcy, and the southwestern interstate region was in little better condition. In Ohio a bitter and protracted strike beginning early in 1914 kept the mines in much of the state shut down well into the year 1915. The union, powerfully intrenched in the organized fields where the check-off prevailed, was yet unable to control the competitive forces of disruption. The average working time in 1914 was 195 days. Wages in the union fields had indeed advanced, but it was the common opinion that the condition of the miners was none too favorable. In non-union fields wage rates were generally lower and annual earnings also lower, though to this statement certain areas favored with exceptionally good working time stand out as exceptions. Living conditions were yet to receive major attention from operators in non-union fields.

THE EFFECT OF THE WAR

The World War arrested for a time the destructive forces of competition within the industry. It created an extraordinary demand for coal, caused by the manufacture of munitions. The railroads, overburdened with war freight, were unable to handle coal as rapidly as was demanded by consumers, and prices rose to levels before undreamed of. The high prices stimulated new development and led to the opening of large numbers of wagon mines. The scarcity of labor and the desire of every shipper to participate in the attractive market led to an increase in wages. Wage rates in non-union fields advanced even more rapidly than in the union fields and for a time were on substantial parity with the union rates. Earnings of non-union miners approached or sometimes exceeded earnings in the union fields. Differences in wage rates and in labor cost, even differences in freight rates, were of little consequence in limiting the sale of coal. Embargoes and Fuel Administration zones disturbed the normal channels of distribution, but every shipper who could get a railroad car could sell his product at a handsome profit.

In the prevailing shortage of labor the United Mine Workers made rapid progress in organizing hitherto non-union states. By the end of the war agreements of one form or another had been made in the Fairmont district of northern West Virginia, in the New

River field at the upper end of the Kanawha Valley, in southeastern Kentucky and Tennessee, in the Cumberland-Piedmont region, and in parts of Colorado. The union further enrolled thousands of new members in territories where no agreement had been made with the employers, particularly in Alabama and the southern Rocky Mountains. These important gains in union membership so increased the foothold of the union in what has been called the "non-union crescent" that the organization could exercise constant pressure upon the wages and working conditions in the non-union fields. Whereas before the war a general walkout of unionized bituminous miners would have closed about 59 per cent of the capacity of the country, the strike call of November, 1919, could and did close 72 per cent of the capacity, though some of it for only a short time.

THE COMPETITIVE SITUATION SINCE THE WAR

With the collapse of the war-time demand after the Armistice was declared, however, the competitive forces within the industry again appeared, and for much of the time since 1918 inequalities in labor cost and conflicting labor policies have tended to unsettlement. The industry is today even more than before the war in unstable equilibrium. Its condition is clearly shown by the cycle of events beginning with the extraordinary boom of 1920 and running through the depression of 1921, the strike of 1922, and the period of forced activity thereafter, now relaxing into another depression, to breed, perhaps, another strike.

The year 1920 was perhaps the most prosperous in the history of the industry. A combination of very low stocks in the hands of consumers after the strike of 1919, a severe winter, a traffic jam on the railroads associated with the outlaw switchmen's strike of 1920, and an unprecedented demand for export resulted in the highest prices on record. Union wages had been advanced April 1 by the award of the Bituminous Coal Commission. The prices were so high and the profits so large, however, as to encourage a demand from the miners for a further increase. A series of strikes beginning in Indiana and Illinois added $1.50 to the day scale, and in rapid succession other union districts and most non-union fields followed suit. The $7.50 day wage is thus more or less the result of the $7 coal of 1920. In thus meeting the advances in the union scale, the non-union operators were influenced in part by the desire to get labor and take advantage of the scarcity prices, in part by the fear that their mines would be organized. A strike for union recognition and a contract occurred in the Mingo district, which for a time promised large success. Another formidable demonstration was made by the union in Alabama, and as a result of these influences non-union rates advanced still further, generally equaling the union rates.

In the following year the general financial depression plunged the industry from the riotous prosperity of 1920 into the most acute prostration since the panic of 1893. Consumption fell off, and consumers, already heavily stocked, could not be induced to buy coal for storage. Prices dropped, mines began to close, and even for those remaining at work part-time operation was the rule. Wage cuts began in the non-union fields of Pennsylvania and Kentucky in April and June, gained momentum rapidly, and by the end of the year extended to practically all non-union districts. The wage cuts carried non-union rates back to the level of 1919, and later, in some

districts, back to that of 1917. Labor cost was reduced, and business began to be diverted from the union to the non-union fields. The pressure of the non-union competition rested very unequally upon the different union fields. Upon the fields of Indiana and Illinois, protected by a large differential in freight rates, it had comparatively little effect. The earnings of miners in those states for 1921 were commonly higher than non-union earnings, but by the end of the year the pressure of non-union coal was bearing down with crushing effect upon the union fields that lay close to non-union fields and were shipping to the same markets.

It was under such conditions that the wage agreement between the United Mine Workers and the union operators expired in March, 1922. The negotiation of a new agreement was attended with almost insurmountable difficulty. Important union districts were ready to sign temporary agreements with the operators to be readjusted after settlement of the Central Competitive Field scale, but to this the International Union could not agree, knowing that its hope of defeating a general cut lay in maneuvering the union fields in a single block. The union operators, especially in the districts hardest hit by non-union competition—southern Ohio, Pittsburgh, Kanawha—felt that they must have relief in the shape of a wage reduction. The union miners, however, felt in no mood to consider a cut. Working time had decreased, and the high rate had yielded to many less than living wages. The average working time in the Hocking Valley district for all mines, including those with especially favorable contract relations, was barely a hundred days for the year 1921, and fully a third of the men got less than ninety days of work. The earnings of full-time tonnage workers in Hocking Valley—that is, men who worked twenty-four pay periods of the year, were $1,220, but out of 41 mines reporting earnings to the Coal Commission for that district, only 5 were in operation every pay period. Under these conditions the union miner, instead of being ready to accept a wage cut, thought that he ought to have more. It seems the obvious thing to say to Hocking Valley miners under such conditions, "Take a wage cut and get more work," but they could ask the equally obvious question, "Is it certain that a wage cut will bring more work?" Merely lowering union wages from one fixed and rigid level to another fixed and rigid level would not remove the unequal competition between the man with the fixed labor cost and the man with the flexible labor cost. Under the conditions of that year, what guaranty was there that the process of cutting the non-union wages would stop at the 1919 level or even the 1917 level? Alabama had reduced the scale for inside day men to $2 and $3 per nine-hour day and "didn't have to pay that much." It is hard to conceive any level to which union rates might have been reduced by agreement so low that it might not have been possible for non-union operators to cut the scale still lower. It was easy to suggest at the time that a wise union leader would urge upon his followers a reduction. Even granting the wisdom of such a policy, it would have been political suicide for any leader, however strong, to make the suggestion. His place would have been immediately taken by another who was willing to fight the battle out. Under the circumstances the situation drifted to a deadlock. It could hardly have done otherwise so long as the competitive conditions remained. The deadlock ended when the competitive conditions changed.

As consumers used up their stocks

the spot price rose alarmingly. Expected supplies were reduced by the sympathetic walkout of the non-union men in the Somerset, Westmoreland, and Connellsville districts, and when the railway shopmen's strike began to interfere with the shipment of non-union coal out of West Virginia and eastern Kentucky the price increased still more. Voluntary control of price was set up by the Secretary of Commerce, and the Government's powers under the transportation act were utilized to control distribution. The deadlock was finally broken, as had often happened in pre-war suspensions, by the market changing sufficiently to permit the union operator to pay the rate and take a chance. Heavy inroads of non-union coal into markets normally belonging to union operators made them anxious for a settlement. A group of shippers who were heavily interested in the Lake trade and were perhaps more concerned as to their investments in the upper Lake docks than in the business of mining coal itself sought and obtained an agreement renewing the old scale. The deadlock once broken, there was a scramble among all the union fields to settle up, sign the scale, and participate in the favorable market. For some nine months after the settlement the shortage created by the strike removed all difficulty in the way of paying the union scale.

The renewal of the agreement was the signal for restoring the 1920 scale in the non-union fields. Business having become profitable under the increased price, no non-union operator wanted to lose workmen or subject himself to the danger of unionization. In fact, even before the Cleveland agreement was definitely announced, the market price of coal had begun to force an increase in the non-union rates. Hundreds of wagon mines were opening in eastern Kentucky and Pennsylvania and drawing men away from the commercial mines. The miner, finding that he could make more as entrepreneur than as wage earner, left his job with the commercial producer and with a buddy opened a wagon mine. Thus does the wagon mine serve as the mechanism by which an increase in the spot price tends to precipitate an increase in wage rate—a mechanism effective not merely in non-union Kentucky but in union central Pennsylvania during the war.

I have dwelt upon the details of this story because it reveals so clearly the factors that render difficult the negotiation of wage agreements. Granted an overproduction of coal and the tendency of the non-union operator to cut rates, the obstacle to negotiation is well-nigh insurmountable. It is the course of least resistance to let things drift to a break, because a break by increasing the price simplifies the work of settlement.

The interplay of competitive forces has brought it about that the industry has little to lose and often much to gain by a strike. I have no thought of implying that strikes have been deliberately arranged to influence the market. The point is rather that the industry must by this time realize that it has been the strikes that have put "kick" into the market and that have afforded the principal source of high profits. Where neither operator nor miner has much to gain by averting a strike, the desire to settle before a walkout will not be strong.

DISTRICT VERSUS INTERSTATE AGREEMENTS

Competitive factors influence also the size of the unit of negotiation necessary to yield workable agreements. It is often said of the Central Competitive Field that it has ceased to be the

controlling factor in the industry that it once was. In point of tonnage, however, the relation of the Central Competitive Field to the entire bituminous area has been singularly constant for years. In 1887, the year of the first four-state agreement including Indiana, Illinois, Ohio, and western Pennsylvania, this territory contributed 38.0 per cent of the country's output of bituminous coal. In 1898 the proportion was 32.0 per cent; in 1921 it was 37.5 per cent. It will be seen, therefore, that the Central Competitive Field today produces practically the same percentage of the output as in the year of the first agreement and a somewhat higher percentage than in 1898, when the present system of negotiation was established.

It is true that coals from the Pittsburgh and Ohio districts no longer compete actively and constantly in the Chicago market with those of Illinois and Indiana, as they used to, but it is also true that the four states continue to compete for the trade of the Northwest—Ohio and Pennsylvania by shipping up the Lakes to the docks of Lake Michigan and Lake Superior, Illinois and Indiana by shipping all-rail through the Chicago gateway.

The complaint is frequently made that the needs of particular districts are overlooked in the deliberations of the interstate conference, and it is urged, therefore, that the operators in these districts make local agreements with their own men. This suggestion overlooks the experience of the industry during the days before the present system of collective bargaining was installed. It was then clearly demonstrated that district bargaining, even between local groups of operators and their employes, could not hold up under competitive pressure from other groups and other fields. It was not merely relief from individual bargaining that was sought by the conferees in 1898, but greater stability than could be expected from district bargains alone. The needs of the industry are, first, some device by which changes in a basic level of rates, whether up or down, may be agreed upon to affect all territory covered by the bargain, and second, machinery for adjusting differentials with respect to the basic rate, when once the changes in the basic rate have been adopted. The Central Competitive Field is a step, but only a halfway step, in the direction of adjusting the basic level in rates. Its weakness lies in being not too large but too small. The bargain made is not yet binding upon a large enough proportion of the tonnage to insure that the agreement, once made, can be kept. For the execution of the agreement depends upon the attitude of the non-union shippers and upon the exercise of their power to raise and lower rates to meet the conditions of the market. By the exercise of this power they can, during a period of depression, break any wage agreement upon which the union operators and union man may conceivably agree.

It is suggested that the English plan of settlement adopted after the strike of 1921 in that country substitutes district for national agreements. But this is only partly true. The plan of settlement is a national plan in which all interests join on equal terms. There is indeed periodic adjustment of the wage rate district by district, with respect to the ability of the employers to pay. There can be no reduction in rate, however, without first a demonstration of reduction in the operator's profit, and this means that the process of cutting wage rates is automatically checked by the necessity of first cutting profits. The present arrangements in the United States leave the non-union operator free to

reduce rates because he thinks that he would otherwise have to reduce profits. This is a very different thing from the English arrangement, under which the operators of a district must first sustain a loss of profit before having a case for reduction in wages.

OUTLOOK FOR THE RENEWAL OF THE PRESENT AGREEMENT

Analysis of competitive tendencies in the present market shows that some of the factors which made it difficult to negotiate the last agreement are operating today. The present situation is much less acute than that existing in the fall of 1921, but the trend is in the same direction. It is marked by dullness of the market, declining price, a tendency for diversion of business to non-union fields, part-time employment, closing of mines, financial distress among union operators, and a growing tendency to seek relief from the scale, which is leading, however, to resistance from the union to any sort of reduction. Trade reports from eastern Kentucky indicate that non-union operators there are already beginning to exercise their privilege of cutting rates in order to get business. From other fields, however, comes the news that no cuts will be made. The operators of the Hazard field of eastern Kentucky are reported to have passed a resolution opposing wage cuts. The smokeless operators of West Virginia have also put themselves on record as opposed to wage reduction. A reduction by one large company in the Logan field, it is reported, was later withdrawn. These are indeed wholesome and helpful signs, and if they indicate a permanent change in policy in the non-union fields they may greatly improve the situation. It remains to be seen, however, whether the competitive tendencies among non-union shippers themselves may break down any such common understanding. One thing appears sure. If wage cutting proceeds far, the same difficulty that interfered with the negotiation of a wage agreement in 1922 will be present again. This agreement expires March 31, 1924.

CONCLUSION

What is the lesson to be learned from this 30-year history of the industry? The moral will be drawn differently by different interests. The advocate of complete unionization will see in these destructive competitive forces the complete justification for his program of organizing the non-union fields. With equal confidence, the non-union operator will read in them the service he has rendered to the country in preventing a complete holdup of the fuel supply. "Organize the industry and you will stabilize it," say the miners. "Protect us, and we will protect the public," say the non-union operators. The controversy, I suppose, will have to be settled by the people in the states and counties directly concerned. The Federal Government has hitherto conceived that it had no jurisdiction or responsibility except when armed violence exceeded the power of the state to quell it.

Into the merits of this controversy this paper does not attempt to go. It ends as it began with an analysis of the competitive forces. How to reconcile the conflicting claims of union, operators, and the public is indeed a difficult matter.

It is clear, however, that the present divided condition of the industry makes it fundamentally unstable. The combination of overdevelopment, high union wage rates, rigid two-year agreements, and the non-union operators' ability to cut rates, tends to produce a definite cycle of events of which the periodic strike is one phase. We may almost set it down as a part of the cost

of this way of getting the question of wage rates settled, that there will be a return of strikes, and at intervals very big strikes. To many, a permanent division into armed camps may seem preferable to intrusting the United Mine Workers with the entire control of the fuel supply of North America. A single union controlling nearly half of the world's output of its most essential commodity would be the strongest in the world.

Upon this fundamental difference in policy and clash of interest between union and non-union fields most proposals for constructive improvement within the industry break down. The clash is so strong as to threaten to make it impossible to have even a national association of bituminous operators. It was recognized at the outset that the National Coal Association could not represent the industry as a whole and deal with labor matters, but differences of labor policy have cropped out so often that one after another important union district has withdrawn, and the association today is far from representing the entire industry.

In like manner proposals for joint action by operators and men to overcome intermittent employment, a factor of great importance in the unrest of the miners, break down upon this rock of division in labor policy. The union shippers cannot afford to assume obligations like unemployment insurance, for example, which do not rest upon all shippers.

May I repeat that this analysis deals only with market tendencies and omits those extremely important factors of human desires and passions and the purposes and personality of leaders, which may be far more significant in explaining the labor relations of the industry. These other factors will be considered by the other speakers.

The Conclusions and Recommendations of the U. S. Coal Commission As to Labor Relations in Bituminous Coal Mining

By Joseph H. Willits,

Professor of Industry, Wharton School, University of Pennsylvania; formerly of Staff of the U. S. Coal Commission

SINCE the labor relations in the anthracite industry are discussed elsewhere,[1] this paper considers the labor relations of the bituminous industry, even though many parts of the paper might apply equally to anthracite. The Commission's study of labor relations consisted mainly of an inquiry into the day-to-day relations between operators and miners, the factors that more immediately affect those relations, and the procedure that governs them. It is, in addition, a study of some of the larger issues between employer and employe that come up in connection with the renewing of agreements and give rise to the danger of a national strike. To present the whole of that study would require much more time than is available for this paper. I shall, therefore, have to limit myself to general statements concerning the conclusions and recommendations from that study.

In this report the Commission pointed out that the country was dependent upon continuous production of bituminous coal; but that, notwithstanding the urgency of a dependable coal supply, the past few years have witnessed interruptions in that supply that have seriously dislocated the process of our national life. It further indicated that, in its judgment, the frequently recurring menace of a coal strike creates a condition that the public considers intolerable. It finds no reason to believe that the public's goal of a dependable supply of coal at reasonable price is inconsistent with reasonable conditions of life and citizenship for the miners or with a reasonable return on judicious investments for operators. It insists that the enormous public interest in the need for coal be adequately safeguarded. It calls upon the operators and the union to set their house in order as a price of continuing the custody of those public interests with which they are now entrusted. The study was a plea for operators and union officials to show that quality of statesmanship, individually and collectively, is essential to a frank meeting of the fundamental problems of the industry under a system of private operation. Most of the study consisted of suggestions made freely with the hope that they might stimulate both sides to such a thorough and open-minded study and such a taking account of stock as would enable them, without sacrificing their own legitimate interests, jointly and separately to measure up to public requirements, thus making it unnecessary for the public to resort to such a drastic overturning of policy as would be involved in a system of public administration.

Mr. Tryon's paper[2] gives some idea of the inadequacy of simple general statements to describe situations in bituminous coal mining when such a variety of natural and economic conditions hold. Equally varied are the conditions in labor relations,—ranging

[1] See sections I and III.—Editor.

[2] See page 82.—Editor.

on the one hand from the autocratic abuse of power by certain union officials as in Kansas and at Herrin to the autocratic abuse by certain non-union operators as in West Virginia on the other. The problems of non-union Alabama and union Illinois can hardly be described in the same terms, and there are all kinds of individuals on either side. One feature of the relations of operators and miners in the bituminous coal industry that may, however, be mentioned in general terms is the frequency with which these relations have been interrupted by strikes and suspensions. Reports of the Geological Survey show an annual loss of man days ranging from 400,000 to 50,000,000, with loss of 2,000,000 or more man days in 16 out of the 34 years, 1890–1923. In connection with these figures, the total number of man days worked should be remembered; this in 1920 amounted to 141,000,000. It should also be remembered that the total time lost by strikes in the bituminous fields of the country from 1899 to 1921 was only 9.8 per cent of the idle time.

These strikes are of three main types, differing from each other in character, in effects on subsequent relations and on the public. They include: (a) strikes to secure a union agreement; (b) suspensions that occurred at the expiration of an agreement because of failure of the two parties to agree on the terms of its renewal, and (c) local or petty strikes that occurred because of some minor grievance, frequently within a period during which relations were governed by the terms of an agreement, in which cases they were in violation of the agreement.

Strikes and the menace of strikes constitute a condition for which the public is anxiously seeking a remedy. But only the uninformed would assume that the remedy is so simple a matter as to be merely a question of ordering strikes stopped. That would be equivalent to saying that volcanoes must not erupt. The problem is to discover and correct the conditions that lead to and may even at times justify strikes and to find the procedure that has the best chance of deciding fairly and peacefully such matters of conflict.

Any consideration of the labor relations of today must take account of the influence exerted by labor relations of the past. In the earlier days of coal mining, power was predominantly on the side of the operator and abuse of that power was the frequent result. Over at least two thirds of the coal fields this dominance by the operator has gradually given way before the rising power of the union until the original position of the two has frequently been reversed. The background of years of oppression, however, even where conditions may now be entirely altered, colors the mental attitude of the miner today so that the coal operator of today must pay an accumulated penalty resulting from the short-sighted labor policies of operators of the past.

After an intensive survey of the actual functioning of the relations in the industry, both the day-to-day relations and the relations at the times of negotiation of new agreements, the Commission issued the results of its study which culminated in specific recommendations. As previously indicated, these recommendations were founded on the belief that better service to the public would ensue if the leaders on both sides of the industry could be led to face and solve the problems of labor relations in a statesmanlike manner, rather than if the state were to inject itself as a continuous and active participant in the daily labor relations of coal mining as it has

in the railroad industry. A system of government in the industry is sorely needed; but there is more hope for success of the system if it be primarily industrial rather than political in nature. The relation between employer and employe,—or between operator and union,—is in its very nature a continuing relation. For its efficiency and success it is dependent on coöperation between the two parties to the relation, just as is the domestic relation between husband and wife. Persons or groups bearing such a relation to each other do not work well together if they have to depend continuously on the instruments of the law to adjust their difficulties for them. Such a pass may be reached,—may have already been reached in this industry, where there is no other course open. But unless we are ready to admit that the hope for the attainment of such better relations under private leadership is gone, the policy of the encouragement of and appeal to the constructive elements among the operators and within the union supported by certain minimum assistance on the part of the public, would seem to offer the less spectacular but more constructive way out.

And, in its study the Commission found enough of such constructive elements to warrant the recommendation of such a policy. In accordance with this policy and in order to stimulate open-minded discussion and to encourage action, the Commission made specific suggestions of policy to the operators and to the union. Sufficient time even to enumerate these suggestions is lacking; they can be presented only in summary form under seven main headings, as follows:

1. Provocative Publicity.
2. Operator Management of Labor Relations in Individual Mines.
3. More Effective Collective Management of Labor Relations by Operators.
4. The Administration of Relations by the Union.
5. Problem of Non-Union Fields.
6. Joint Adjustment Machinery, Including the Making of Agreements.
7. The National Strike and the Government Relation to Labor Relations.

I shall comment briefly upon each of these groups of recommendations in turn.

(1) Provocative Publicity

The Commission recommended that each side place some check upon provocative and truculent publicity which tends to undermine good relations.

At the outset of its discussion of Labor Relations in the Bituminous Industry, the Commission pointed out the malign influence of unduly partisan propaganda, and commented upon the gulf that often separates the publicly expressed mind from the actual mind of the industry or of the union. Concrete incidents, true though they may be, but rarely typical, are made the subject of press articles and affidavits and hurled back and forth "ad nauseam" to show the snowy whiteness of "our" side and the black depravity of "yours." Little of this propaganda is helpful or constructive and little of it is relevant to the main issue of securing wholesome and efficient industrial relations in either the union or the non-union branches of the industry. It is true that this official propaganda contains many facts and many elements of truth. But they make that which is true of a part appear to be true of the whole. To imply that these incidents are true of the whole industry or anything like the whole industry, creates an impression that is distinctly mis-

leading. Many of these official "publicity" statements remind one of the old statement—"There are three sides to every question,—your side, my side, and the right side."

For a time militant publicity may deceive the public and cause people to line up on one side or the other on the basis of partisan prejudice and without understanding of the issues involved. In the end, however, results of this kind largely neutralize each other and the thoughtful public becomes disgusted with both sides. When, to such disgust, is added the hardship of an interrupted fuel supply or a supply secured at burdensome cost, the setting is right for drastic action without too fine a regard for either the operators or the union. This is the end towards which destructive propaganda on both sides has been leading. Misleading statements tend to undermine good relations where they exist and in time may destroy the possibility of such relations. Unless each side will voluntarily place some check upon this sort of activity there must be reduced hope of such progress within the industry as will forestall drastic public action. Neither the operators nor the union can win the public solely by abusing the other side.

The fact that publicity even about a highly contentious situation can be couched in language that commends its message to public consideration is shown by the dignified and courteous tone in which both anthracite operators and the union gave their response to Governor Pinchot's proposals for avoiding the anthracite strike. (Statements carried in the press of August, 1923.)

Suitable publicity is a proper agency of organization. Both operators and union should present their case to the public. In doing so they have an opportunity to render a real service, by acquainting persons outside the industry with some of the problems the groups within the industry are facing, and by interpreting, as no one else can, the hopes and aspirations of the people in the industry. Publicity carried on with this aim would not only inform the public of the facts but it might make for a broader tolerance of divergent views.

The Commission placed its recommendation concerning provocative publicity first and, by that fact, seems to have implied that some limitation upon provocative and truculent publicity was an essential preliminary to the development of good relations within the industry.

(2) Operator Management of Labor Relations in Individual Mines

Next to this recommendation, I would place the group of recommendations that had to do with the operator management of labor relations within the individual mines. The public is better acquainted and is more directly affected by the dramatic national strike; but, in any constructive program, we must frankly recognize that the starting point of all labor relations in the industry is at the individual mine. Therefore, the nature of the operator management of labor relations at the mine is of primary importance in determining whether the agreement between the two parties shall function smoothly, and whether the path of labor relations, as a whole, is to be rough or smooth. The connection between local mine management and the precipitation or avoidance of the national strike may be indirect, but it is very real. The national strike may be in part the explosion resulting from the accumulation of petty irritations and a down-grading of the day-to-day relations at the individual mine. These daily irritations do not directly create

the national strike, but their presence or absence may be responsible for states of mind that determine whether there is to be a strike or not. Compared to other industries the coal industry has been remarkably slow to develop constructive policies, except as they have been forced upon it by the actual or potential presence of the union. No sound structure of labor relations may be developed unless the base is sound.

The Commission, therefore, recommended more serious concentration by individual companies upon the real psychology of men at work, especially noting the examples of the many companies which have established good relations. More specifically it commended to the industry that policy which has been demonstrated to be sound in coal, and in other industries as well,—the policy in each company of centralized responsibility for labor relations.

The Commission called attention to the importance of superintendents, foremen, and assistant foremen, since these officials have greatest initial influence on the management side in making labor relations coöperative or militant in nature, since they are closest to the men and actually handle the grievances that arise. Unquestionably the superintendents, foremen, and assistant foremen determine the extent of freedom from the petty irritations that compose the larger problems of labor adjustment. The good relations that held where a "boss" was of the right type were marked. On the other hand, the effect of daily work under a hostile and unfair foreman could hardly be overestimated. It would be entirely unfair to say that the foreman is solely responsible for the type of mine committee selected, but certainly a bad foreman tends to result, in time, in the election of a bad mine committee. Work in a mine, even under union conditions, offers a foreman a large opportunity to discriminate among workers if he so desires. To the men, the foreman is the company. The Commission, therefore, recommended more attention to the training of superintendents, foremen, and assistant foremen in problems of management, especially in dealing with labor under a union agreement.

In this same connection, the Commission stressed the importance of good operating management so that adequate service, including cars, supplies, etc., to the miners at work at the face will be maintained, and delays which limit the earnings of piece or tonnage workers may be avoided.

The fact that half-information on topics of mutual concern ranks high among the factors that tend to mar relations, led the Commission to recommend the general policy of publicity of facts within the individual mines. The list of specific suggestions made in this general group might be further extended, but these will serve to illustrate the type of recommendation made.

(3) More Effective Collective Management of Labor Relations by Operators

Outside of the non-union fields the miners are more effectively united by organization than are the operators. Differences of policy and differences of a political nature, of course, arise within the union but, after a given policy is agreed upon, the union more often secures effective solidarity in carrying it through. There is no national organization of operators for the discussion and development of general labor policy covering relations with the union. The scale committee of the Central Competitive Field acts at times of negotiation in a way to produce

results of national effect, but it represents only one section and is a temporary rather than a permanent organization. Even the local associations, of which there are many, usually do not cover the whole of a United Mine Worker District, so that unity of action within the district even is not secured by operators as it is by miners.

The result of this situation is that operators are apt to fail to attain a consistent policy either within the districts or nationally in their dealings with the union. In the districts where the agreements between the operators and the union are actually administered, this lack of consistency of policy results in a disorganization of relations under the agreement. This disorganization comes about because certain operators adopt a "peace at any price" policy and, under pressure from the union, barter away rights specifically reserved to operators under the agreement, until all operators are practically compelled to make the same concession.

Or, the opposite tendency prevails. And a hard-boiled operator plays sharp tricks and breaks the agreement,—a policy which destroys confidence, encourages retaliatory acts and brings a less responsible leadership to the top in the union. In other words, if extreme policies in either direction are not controlled, the position of those operators who honestly seek to maintain the agreement is made more difficult.

The absence of a continuing national organization of operators devoted to a consideration of the common problems of labor relations, precludes a statesmanlike attack upon such fundamental problems of the whole industry as unemployment, wage differentials, etc.

Moreover, while good faith is essential to the maintenance of relations under an agreement,—in practice good faith alone will not stand the strain unless on both sides it is backed by an organization with enough force, unity and ability to command respect. The union has acted on this theory and has created an organization over two thirds of the soft coal area which seeks to prevent the abuse of power by operators. The obstacles to consistent joint action among operators are enormous, but effective organization directed towards unity of policy, and dignified and reasonable insistence that operators and union alike adhere to the agreement, is essential to satisfactory dealings with a well-organized union. Apparently the Commission felt that the best hope of meeting some of the fundamental evils of the industry and of curbing abuse of power by the union was in more effective collective organization by operators, rather than in laws or labor boards, and hence called attention to the fact that the operators are not so effectively organized in the union districts as the miners and that both as a defensive and as a coöperative measure there should be effective district and national organization and a national labor policy among union operators. Such an organization should bring to the surface the large amount of sound and constructive thinking that is being done among operators concerning the labor problems in the union fields; it should strengthen and stimulate the work of the various labor commissioners. It should create the office of national labor commissioner to function as do the labor commissioners in the districts but on national problems. In this connection, attention is called to the great importance, during the process of negotiating a new agreement of having negotiators of the right type,—men who know the union and the industry, who know when to be aggressive and when not to be, masters of sound strategy and wise tactics, and, finally, men whose straightforwardness the union trusts.

Many of the local operators' associations have striven for a unified, consistent policy in the administration of

the agreement by the appointment of an official known as the labor commissioner, who represents the operators of the association in labor matters. The Commission indicated its belief that such an effort towards consistent labor policy was a step in the right direction in the following words:

> We find that one of the most constructive steps that has been taken collectively by the bituminous operators has been the almost universal establishment of the office of "Labor Commissioner." Only the highest grade men can adequately discharge the functions and get the full possibilities out of this office.

The Commission made three specific suggestions of important pieces of work that should be undertaken by operators and union collectively and which cannot be effectively undertaken so long as no national organization of union operators to discuss labor relations exists. These suggestions were made in these words:

> (a) We recommend that the operators and the union undertake both separately and jointly the study of means of meeting the fundamental problem of unemployment through the stabilization of the industry, as a service to their own interests and as an evidence to the public of serious intention on their part to meet their own problems in a statesmanlike way under private administration.
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> (b) We recommend the establishment in each district and nationally of joint commissions of operators and miners, with the aid of competent men to make thorough studies of principal jobs and of the existing rate differentials. It is important to develop an adequate basis for the needed revision of the rate structure, at present marked by many inequalities between sections, between mines, and between jobs in the same mine.
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> (c) We recommend serious study by both sides, jointly and separately, of the problem of undue limitation of output and of the causes which lead to it.

(4) THE ADMINISTRATION OF RELATIONS BY THE UNION

In the early conditions that prevailed in the mining camps of this country some external pressure approaching a monopoly character was necessary if the living conditions of the miner were to be brought to a decent standard. The United Mine Workers has been that external force. It has enormously improved the miner's lot. The union has won its struggle to become great and powerful. It is facing a critical transition period. The challenge confronting it now is whether it can use great power in a responsible way to serve social ends.

All that has been said of the evil effects of bad management or of the constructive good which can be accomplished by good management on the operator's side can be applied with almost equal force to the union's management of its share in relations. When the growth of the union and the economic cycle swing the union into power, then its tactics and its practices become of especially vital importance. Over the past thirty years the greater importance of management tactics has been overwhelming; but a closer parity of influence has been established in the last seven years, and the future may show as many periods of labor dominance as of dominance of the employer. A reconstruction of union policy from a purely militant to a more constructive basis is just as necessary for the continued vitality of the union as has been the reconstruction of operator policy with the coming of the union. The United Mine Workers in the future will be judged not merely on its ability to protect the interest of the miners alone but also on its ability to see that self-interest lies also in safeguarding the interest of the public as well.

The law of diminishing returns must increasingly operate if dependence is only on a policy of sheer force and militance. A powerful union with a large income, and one which makes business agreements with employers assumes responsibility to see that agreements are enforced by its members and the activities of irresponsible unions and union officials curbed, along with its authority to make agreements.

This applies especially to the union's program for the unionization of the non-union fields. Not merely must it avoid all destructive labor policies with such organization, but it must also recognize that the contest to organize the non-union fields will be won quite as much by the union's performance in the union fields, as by its organizer's activities in the non-union.

Some such ideas as these seem to have been in the Commission's mind when it adopted the following recommendations:

(a) We believe that the union is facing a critical transition period. It has gone through and won the struggle to become powerful. The challenge confronting it now is whether it can use great power in a responsible way to serve social ends.

(b) We particularly regret that the union has given so little serious consideration to the ways of meeting the fundamental problem of the coal industry,—the problem of irregularity of production and employment,—which concerns its members more deeply than any other problem observed, and on which they keenly desire that something be done. A definite effort to devise a joint system of unemployment compensation or insurance which shall offer considerable incentive towards steadiness of operation, as well as relief during payless days, will be of vital interest to the citizens of the industry.

(c) We believe that the union will need to depend more on *facts* and less on force if it is, in the future, to advance the interests of its members as successfully as it has in the past. We therefore suggest the importance within the union of continuous facilities for research which will collect and interpret facts and aid and enlighten union policy.

It furthermore plainly indicated that the distance between the higher officers and the local unions was great compared to other unions and that the resulting absence of close contact precluded the effective discharge of invaluable educational service by the union and maintenance of agreement-observing control over local unions. It, therefore, specifically recommended:

Much closer contact and greater educational service from the district and national officers of the union to the local officers and men.

Reference has also been made to the proposals of joint and separate studies of jobs, wage rates and differentials, unemployment and limitation of output. Concerning the check-off, the Commission reached the following conclusion:

We recognize the irritating effect of the check-off to the operator, especially in the collection of special fines and assessments. And we recognize its injurious effects upon the union in divorcing the problem of income from the winning of membership, and in the resulting lack of closeness of contact and of educational service and control by the higher officers to the lower officers, and to the rank and file members of the union. We believe that the unsettling effects of casting out this practice, however, might more than overbalance the gains. It may well be that the use of the check-off for the collection of fines and special assessments (except in the case of fines for violation of the agreement) should be discontinued. But we do not feel that the check-off is vital enough ever to justify a suspension of operations, whether the union is seeking to extend its use or the operators seeking to throw it out.

(5) THE PROBLEM OF THE NON-UNION FIELDS

One of the most difficult problems of labor relations concerns the problem

of the non-union fields in many of which, especially in times of depression, rates of pay and other standards lower than those of the union fields prevail and where forcible measures are used both by the union which advocates unionization and by operators who oppose it. The Commission, while fully recognizing the accomplishment of the union in elevating standards for the miners even in the non-union fields, has expressed itself in the following general terms:

The point of departure for this report is service to the public under conditions fair alike to employer and employe. If it were clear that this end could best be advanced by the complete unionization of all the mines we believe the public would favor it and we would not hesitate to recommend it. If de-unionization gave promise of best accomplishing the goal, we would be ready to recommend that. But we do not find convincing evidence that the followers of either complete unionization or complete de-unionization have demonstrated such desire and capacity to heed the public's goal as to warrant our recommending that the public's weight be thrown back of either policy.

Specifically the Commission took the position that the individual miners in the non-union fields should be allowed a free-will choice in determining whether they were to be unionized or not and expressed that policy in the following recommendations:

We recommend the recognition of the right by the union to encourage non-union workers to join the union by the example of service to its members in the union field, by showing where the advances in the union field have helped the non-union workers and by *peaceful* and honest persuasion of every sort.

We recommend the recognition of the similar right of the non-union operator, by good works and honest persuasion *without force*, to maintain a non-union status.

We condemn violence, thuggery and gun work, violation of the law and disturbance of the peace, whether practiced by the union to enforce complete unionization, or by the operators to prevent it.

We recommend that such destructive labor policies as the use of spies, the use of deputy sheriffs as paid company guards, house leases which prevent free access and exit, and individual contracts which are not free-will contracts, be abolished.

Such recommendations cannot be enforced by any Federal power; their enforcement must depend on the state and local government.

In order still further to aid the miners in the non-union communities in making a choice based on facts, the Commission recommended "continuous compulsory collection and publicity of rates and rate changes in the non-union fields by the general Government." Rates in the union fields are already public.

Appreciating that the absence of the union opens the way to certain abuses in management the Commission recommended:

(a) That adequate checks to insure against capriciousness and unreasonableness be placed on the exercise of the right to discharge.

(b) The universal establishment in the non-union fields of a checkweighman selected and paid by the men as a means of insuring confidence in weights.

(c) That the form of wage payment known as "Subcontracting" be discontinued. It is held by most of the coal industry and by nearly all other industries out of date and inherently subject to abuse.

(d) That the leasing of convict labor to operators, such as is now the practice in Alabama and a few other non-union areas, be condemned as demoralizing to the industry and degrading to the convict.

(e) That the discounting "scrip" be made illegal.

(6) JOINT ADJUSTMENT MACHINERY, INCLUDING THE MAKING OF AGREEMENTS

Most of the agreements in the various districts contain provision that

disputes arising during the life of an agreement shall be settled, if possible, through the joint conciliation board of the district, or, failing that, by some arbitrator such as an Umpire. Some districts do not contain such machinery for peaceful adjustment of disputes and delays in settlement and illegal local strikes tend to be encouraged. In consequence of these facts, the Commission recommended:

(a) A continuing Umpire in each district as indispensable to the growth of good relations, since such an agency tends toward the establishment of orderly processes of law in the industry, facilitates the necessary bargaining that goes on from day to day, is an educational force for both operators and union and is a foundation for progress upon which the industry can build with confidence.

It furthermore recommended:

(b) That each agreement in the union fields contain provision that disputed cases of discharge shall be settled promptly through conciliation or arbitration.

One wonders why this should be limited to discharge cases arising under the agreement.

As a part of the joint machinery of relations may be considered the process of making the new agreement. While time does not allow here a description of that process, it may be said that the union first negotiates its agreement with the Central Competitive Field (Illinois, Indiana, Ohio, and western Pennsylvania) and will negotiate with no other fields until this agreement is made. The Central Competitive Field agreement having been made, the other district agreements follow it in essential matters more or less automatically. Many criticisms of this system exist; of these, the criticism that it does not allow adequate flexibility to meet necessary local conditions as of competition, or in cases of national strike where the local union and the local operators' association are restrained from agreeing when they are willing and ready to agree; and the criticism by outlying operators that their agreement is substantially made for them in conferences in which they are unrepresented are the most important. Without discussing these reasons the policy of the Commission may be quoted:

We recognize that the establishment of a policy of complete district autonomy in the negotiation of new agreements, as advocated by some operators, would result in great turmoil and a renewal of the fierce competition between districts that must inevitably lower standards. We suggest, however, that many operators in the outlying fields have a real grievance when they say that essential elements of their agreements are made for them in conferences in which they are not represented. We suggest that the two parties should work out a system of national negotiation with district agreements, which will avoid standard-cutting wars between districts and secure adequate flexibility to meet necessary district conditions.

(7) THE NATIONAL STRIKE AND THE GOVERNMENT'S RELATION TO LABOR RELATIONS

As has already been said, the Commission did not in its recommendations look with hope towards the management of labor relations by any government bureau or government labor board or by congressional enactment. That the Government has no share in the development of labor relations that will better serve the public interest is not, however, to be inferred; the functions assigned to the Government were the functions of (a) continuous investigation and publicity so that all facts may be known and relations shall go forward in the light of public knowledge; (b) the function of research and study into such fundamental

problems of the industry as unemployment and rate differentials and (c) the function of mediation.

The discussion of these functions in the Commission's report centers chiefly around the discussion of the national strike. This the Commission discusses in the following words:

We do not advocate nationalization as a means of meeting the national strike or other parts of the problem of labor relations.

We recommend against compulsory arbitration as a means of preventing a national strike, because we do not believe in discretion-made law in either the industrial or political fields, and because there is no way to enforce a compulsory award which does not involve enforced operation or enforced labor.

We believe that incorporation of the unions would not have the effect of binding the union to its contracts, and making it responsible, often predicted for it. Contracts can now be made if both parties wish, with effective binding power, but ordinarily neither side desires that wage contracts shall be specific enough to be legally binding through judicial enforcement. The flexibility of various state incorporation laws makes it unlikely that incorporated unions would differ practically from unincorporated. Finally the Coronado case not only decides that a union is a legal entity for the purpose of responsibility for torts, but also holds that a union voting a strike renders itself responsible for acts growing out of the strike just as a corporation would be responsible for the acts of its officers and that the union funds can be reached directly through a suit for damages, just as the property of a corporation can be.

Half information on topics of mutual concern ranks high among the factors that tend to mar relations. We, therefore, recommend a policy of publicity of facts,—both within the individual mine and nationally,—which would include accounting reports by operators as recommended for in the Commission's anthracite report and similar reports concerning union finances.

We recommend that the Congress provide for the continuing coöperative study of and action against the problem of unemployment as one of its first responsibilities. This would involve studies and activities in the fields of labor relations, technical aspects of production, and the marketing and storage of the product.

We recommend continuing coöperative study by the general Government of the principal jobs and of the existing rate differentials. It is important to develop an adequate basis for the needed revision of the rate structure at present marked by many inequalities between sections, between mines, and between jobs in the same mine.

We recommend continuous investigation and publicity by the Federal Government of the basic facts upon which industrial relations depend. Such continuous investigation should not be principally critical, in the sense of being chiefly concerned with noting cases of bad practice, but rather with making known cases of the opposite sort. This should bring about such a continuous interchange of information as to stimulate a greater sense of public responsibility and better practices by the union and the operators.

We recommend special compulsory investigation when the prospect of failure to renew an agreement is imminent, so that the public may have a chance to be heard before conflicts arise. Specifically, we recommend an inquiry under the authority of the President of the United States. To this end, it is suggested that all agreements should contain a clause that will provide for automatic renewal of all agreements except in regard to provisions concerning which either party may have given notice to the other 90 days in advance of the date of termination of the agreement. In case of failure to agree, a report, setting forth the factors at issue, should be made to the President, by each side, not later than 60 days before the expiration of the agreement. It is recommended that when such a report is made, the President immediately inquire into the factors at issue and secure a report and award thereon made on or before the date of expiration of the agreement. The award would or would not be made public, as the President would deem wise in the particular circumstances. It

should be the purpose of such a report to focus upon the negotiators the irresistible moral pressure implicit in their joint obligation to furnish the public with coal.

We are confident that with a continuous orderly process of investigation and report, and if advisable with the timely injection of a definite representative of the public into the situation in case of disagreement, it will become very much more difficult for either side to adhere in any captious way to a contention that will precipitate a tie-up of the industry.

In case a suspension occurs because of failure to reach an agreement before the expiration of an existing contract, there should be no question of the continuance of maintenance men at their occupations. Both in the interest of the industry and in that of the public every contract should provide for this contingency.

The best approach to a remedy for the evils of the general strike will not, in our judgment, be found in an immediate resort to drastic prohibitory measures. Whatever artificial gap may have developed between employer and employe, they must work together, or there can be no peace and no real efficiency. The weight of opinion among operators and union officials alike is that they themselves desire to fix the fundamental terms, upon which the industry shall operate. The most thoughtful and best advised among them express great confidence of their ability to do this in an orderly way. From our survey of the statesmanship that exists in the industry, it is believed that the operators and the union are equal to this task, if once they recognize the finality of the public insistence on continuous operation and address themselves single-mindedly to bring that object to pass. It will be necessary, however, for them to find means of bringing their best statesmanship to the front in connection with the general negotiations. They cannot perform this indispensable public duty unless they emancipate themselves from the atmosphere of militancy that too often characterizes their proceedings.

It is believed that the combination of continuous investigation and publicity with the possible resort to mediation at the instance of the President of the United States, may remove the necessity for more drastic emergency measures. The process here outlined should have a sobering influence that will make strongly for enforcing responsibility to the public among representatives of both the operators and the miners. Until measures for holding both sides to their responsibilities have been exhausted, it will be extremely unwise for the public to embark on coercive measures of regulation of labor relations.

While it is believed that the above suggestions will encourage mutual accommodation and agreement at the time of the renewal of negotiations and will therefore lessen the chances of national strikes or suspensions, the fundamentally constructive opportunity lies in the building up of the day-to-day relations within the agreement period. Improvement in industrial relations during the life of the agreement would very considerably lessen the probability of a national strike.

Management Leadership in Industrial Relations

By Willard E. Hotchkiss
Chicago Director, Industrial Federation of Clothing Manufacturers

Of course it will be understood that I am writing as an individual and not in any sense as a representative of the Coal Commission. There are some points at which I should be inclined to go further than the Commission has gone in recommending the definite encouragement of leadership through the aid of public agencies. It seems to me that continuous public inquiry and publicity are needed to keep abreast of conditions in coal mining with which the public is concerned. A public agency so organized that it could carry on wise investigation and furnish proper publicity at all times, and in addition could in emergencies either extend its scope to include mediation or proclaim the facts upon which other mediative agencies would be set in motion, would serve a desirable and necessary public purpose.

I realize that this suggestion may seem to look in the direction of more government by commission and more regulative activity. No one is more averse than I to seeing bureaucratic activity expand. Nevertheless, whatever may be said about the efficiency of government regulation of business, comparatively little judicious criticism has been lodged against those scientific agencies of the Government whose activities are chiefly informative. It is an outstanding fact that such divisions of the Government service have in general set a high standard of business efficiency and good sense.

The dramatic setting of a contentious situation like industrial relations in coal mining may perhaps make it difficult for a government agency to promulgate calm, uncolored information about it. However, the earmarks by which a considered, scientific treatment of facts is to be distinguished from a spectacular or propagandist use of them, are recognizable in respect to social and human facts substantially as easily as in the treatment of other data. Nothing is so well calculated to get the discussion of a troublesome question out of the realm of propaganda as to give it a setting of orderly, scientific scrutiny. Continuous functioning of a suitable agency of inquiry and publicity would be calculated to create the atmosphere and lay the foundations for later working out of policy in this field.

It is not to be expected that an agency created in a time of stress, functioning under pressure as the United States Coal Commission necessarily did function, could do more than make an approach to a problem of such magnitude. The one thing that we know about public policy in respect to coal is that here is a situation that is enormously important to every citizen, a situation in which every constructive force should have public encouragement and every destructive one should be held in check. How can the public apply this moral encouragement and restraint unless it is continuously and efficiently advised? Fortunately, the task of giving such trustworthy information, as well as the task of putting it out in a way that will cause it to be read, is one which well tested experience proves to be possible of attainment.

The creation of some such agency as is here suggested appears to me the minimum of leadership which is to be

expected of the Government. What definite measures of regulation might flow out of such an initial step no one could foretell. That will depend to a large extent on the influence it proved to have in encouraging leadership and stimulating wise individual and collective action among operators and men.

In emphasizing at the outset what seems to me one of the obvious responsibilities of the public—of the Government, if you will—in respect to coal mining, it is not in any sense my thought to make the Government primarily responsible for industrial relations in coal mining. It is inherent in a system of private operation that responsibility should rest in the first instance on operators. Mr. Warriner's address on the anthracite situation[1] is essentially a plea for leaving responsibility with operators, freeing them from certain restrictions in discharging it and holding them for results. The existence of a strong union somewhat modifies the conditions under which management leadership must function, but in most of the essentials of progress the presence of the union does not make leadership in management less necessary.

In many bituminous operations the conditions as indicated by Mr. Tryon[2] are of a sort to discourage leadership. It is obviously difficult to proceed from wise and consistent policies to the most approved practice when operations are intermittent and uncertain. A dependable market with opportunity for steady employment usually helps mightily in reducing strain. Since deficiency of such opportunity is recognized as a major irritant in coal mining, leadership among coal operators is not alone a matter of management personalities, but of conditions as well. In suggesting, therefore, certain earmarks of management leadership, I am not primarily concerned with questions of individual praise or blame.

Management leadership is too many-sided to lend itself readily to exact definition; there are, however, a number of questions about management the answers to which suggest the quality of leadership in the business concerned. I shall merely refer to some of them.

1. *To what extent does the management accept responsibility for industrial relations and definitely plan for the discharge of that responsibility?*

2. *Does industrial relations occupy a major or a minor place in management councils?*

3. *Does management avail itself of adequate technical advice on industrial relations and provide for thorough and competent study of its industrial relations problem?*

4. *Is proper attention given to the selection and training of the supervisory force, from the standpoint of ability in handling men under the conditions that obtain in the particular mine?*

5. *Does management keep itself in control of the physical conditions under which men work? Is mine management efficient? Do the men on the job receive from management the service to which they are entitled?*

6. *Is management consistent within itself? Is there teamwork between the home office, the mine management and the supervisory force?*

7. *Are the items of industrial relations policy coördinated into a consistent whole and adapted to the conditions of the particular company?*

8. *Does the policy take account of the social forces by which workers are surrounded and the influences to which they are or may be subjected?*

9. *Is the pay right?*

10. *What are the provisions for contact of officers of the company with the working force?*

11. *What are workers told about the business? Does it get across or is it discounted as propaganda? Do they get*

[1] See page 53.—EDITOR.

[2] See page 82.—EDITOR.

information regularly or merely in emergencies?

12. *Does the management lead the procession or follow it in the things that make for satisfaction of workers?*

MANAGEMENT LEADERSHIP IN UNION AND UN-UNIONIZED INDUSTRIES

The outstanding fact concerning industrial relations in coal mining is the extent to which the industry has become unionized. Superficially the task of management leadership is quite different for the unionized and the un-unionized part of the industry. Beneath the surface, however, the difference is one of form rather than of substance.

It appears clear and is understandable that the part of the industry not yet unionized would like to prevent unionization. If the non-union operators and the union operators, for that matter, will study the progress of unionism in industry generally, they will discover that the industries in which unions have secured the strongest hold have been largely industries in which, before the advent of the union, management leadership had not reached a high stage of development. They will also discover that many of the individual plants in these industries that have become unionized, and sometimes a whole industry, have put forth great effort and spent vast sums of money without avail trying to prevent unionization or trying to oust the union after it was in. They will also notice, and this is fully as true of the coal industry as of other industries, that by and large union employers who are getting along acceptably with a union have been able in some way to inject leadership into their union situation.

From experience of this sort the following conclusions seem to me fully justified and well worth the careful consideration of coal operators both union and non-union.

1. *Management leadership that combines wisdom, good purpose, vision and hard work is a better insurance against unionization than force and repression.*

2. *The same kind of management leadership constitutes the best hope of acceptable relationships under union conditions.*

3. *Whatever the balance of union and non-union operation in the coal industry, the only way in which management can discharge its responsibility for maintaining industrial peace is through leadership along some such lines as those suggested above.*

4. *The fundamentals of management leadership do not vary greatly as between the unionized and the un-unionized parts of the industry.*

COAL INDUSTRY BACKWARD IN ASSUMING MANAGEMENT RESPONSIBILITY

General knowledge of the history of coal mining in this country, as well as the results of our special study, justifies including the coal industry among those in which leadership was not outstanding before the advent of the union. As indicated above, there are many reasons for the absence of leadership other than those for which the individual operators or the different operating interests are directly responsible. It was quite clear in many of the operations which we had occasion to study that the fundamental economic conditions were of a sort to discourage leadership, especially the intermittency of demand. There is danger, however, that the recognition of difficulties may be followed by discouragement and inertia rather than by effort to overcome them. Too many coal operators have established reasonably good relations under discouraging conditions to justify the attitude that the industry or even

badly conditioned operations in the industry cannot make progress towards better relations.

While the coal industry as a whole is backward in management leadership, the management of particular mines is outstanding for many of the elements of leadership in which the bulk of the industry is weak.

In reference to the first of the criteria of leadership above listed, it appears fairly clear that the coal industry as a whole has not definitely accepted the responsibility of management for industrial relations and planned to discharge that responsibility with a thoroughness which seems necessary in the situation.

Under the second caption, industrial relations does, perhaps, occupy a fairly large part in the central management councils, but one in which management is playing too largely a negative rôle. This is perhaps a natural result in an industry which is so largely influenced by an aggressive union, especially as concerns general adjustments of the wage level and other working conditions. However, from our study of the situation we were forced to conclude that the majority of operators need to give more definite and consistent thought than they are doing to the policy and procedure governing their relations with their men, especially the day-to-day relations at the mine.

Under the caption technical advice, likewise, we found in general a lack of thorough study of industrial relations problems of particular operations, and of adequate competent advice to management in the formulation of many of its policies.

RELUCTANCE TO ACCEPT THE TECHNICALLY TRAINED

As to the selection and training of the supervisory force, we found that in a large part of the union mines the supervisory force is made up of persons who have formerly occupied official positions in the union. Many of these men render excellent service and there is little doubt but that, given the right temperament and viewpoint, the experience they have had as representatives aids them later in supervising the men they formerly represented. The fact, however, that the supervisory force and many of the operators and higher executives themselves are drawn from the official personnel of the union, tends in some measure to set the level of management leadership not far above the level of union activity.

There seems to be quite a general reluctance on the part of both the union and the operators to have technically trained men who have not come up from the ranks brought into supervisory positions. In several places we found that men who had been brought in from engineering schools were referred to as "mail order executives" in a way which clearly revealed a tendency to ridicule the operator who tried to recruit his executive and supervisory force in this way. Nevertheless, there are a considerable number of successful executives in the coal industry today who have had their initial training outside the industry.

Notwithstanding the tendency in many quarters to regard life-long experience in the industry as indispensable to executive service, the number of executives drawn from other walks of life is on the whole increasing. This tendency is wholesome. Irrespective of the source from which foremen and superintendents are drawn, there is need of greater attention than has been given in the past to the training of the supervisory force in all of the essentials of management service and human relations upon which wholesome conditions depend.

The question of the supervisory force

leads directly to the related question of mine management. The knowledge which the supervisory force has of the jobs, their efficiency in the adjustment of necessary differentials for changing conditions of work, their ability to furnish the worker the service at the face, such as cars and timbers, are among the most important elements in making for harmonious or inharmonious relations. I do not recall a single mine that we found to have been peculiarly successful in avoiding interruptions and friction which was not conspicuous for service at the face. Conversely, most of the operations that were notorious for chronic trouble were conspicuous for the absence of such service.

No Teamwork

Another management defect to which the conditions of the coal industry make it peculiarly subject, is the absence of teamwork between the home office, the plant management and supervisory force. This defect sometimes shows itself in the lack of such control on the part of the home office as is required to make constructive policies effective. It shows itself equally in the lack of such knowledge on the part of the central authorities as will preclude orders and regulations that are out of harmony with the conditions at the mine and therefore make for friction. There were numerous mines in which one or the other of these defects was in evidence, and frequently both of them were manifest at different times and under different conditions in the same company. Consistency of management policy and procedure is obviously indispensable to wholesome relations.

Questions Needing Careful Study

Closely related to the question of consistency as between the home office and the mine is the question of the integration of industrial relations policy into a properly coördinated and consistent whole, adapted to the conditions of the particular company. In many cases we found companies were having serious trouble and undergoing frequent interruption of work because the results of wise action in respect to the major portion of their operations were vitiated by some particular practice that was out of harmony with general policy. Frequently, the items responsible for trouble were insignificant in comparison with the sum total of operations; in the absence of careful analytical study they escaped notice and until some trying case arose their influence as causes of friction had not been brought into the open.

Doubtless a predominant item in the adjustment of policies to the social forces and influences with which the workers are surrounded has to do with their relations with the union. Along with this, however, is the question of different races and of the communities in which the miners live, their home life and needs, and their mental attitudes. This point is especially worthy of attention because of the fact that individual operators in various parts of the country have shown peculiar skill in adjusting their policies to the psychology of their working force in such a way as to inspire confidence and get results. Intelligent management in respect to this item requires something more than merely regarding a group of miners as so many members of the union with pit committeemen to represent them.

Except in connection with the general strike the question of pay is not an important consideration in coal mining, in so far as it has to do with the general wage level. It is important in reference to the differentials paid for different conditions of work. The tardiness of the industry in trying to

devise some thoroughgoing plan for studying the question of differentials in rates and in devising some objective test for relating these differentials to the difficulty of the work, represents an opportunity which coal operators throughout have too largely overlooked. Obviously, the question is one that is fraught with great technical difficulties, but just as obviously it is one that requires serious study. We find that comparatively little has as yet been done in the direction here indicated.

The contacts of the responsible executives with the working force present evident difficulties. The way in which industrial relations have been bandied about in the official publicity of operators and union has tended to create an atmosphere of restraint which makes overtures looking towards closer contacts somewhat dangerous. It is quite clear, however, that there are a good many things about the coal business in which the interest of workers would be wholesome. Just how to bring about the right sort of contacts and how to impart trustworthy information which would not be discounted as propaganda, is a difficult question.

Clearly this is a subject that can scarcely be approached until the policies of the company are right and until what management has to say about itself is on a basis to secure acceptance as honest and sincere. Companies whose condition and policy are such that they are in a position frankly to take workers into their confidence find that such confidence benefits relationships all along the line. The method of establishing contacts and imparting information requires some care. Obviously workers who have not regularly enjoyed an opportunity to secure information about a company are not likely to be greatly impressed when an executive officer appears before them in an emergency.

There is scarcely an item or a detail of management leadership which is not important in its bearing on industrial relations. All of these items, however, are embodied in the one question, whether the particular management is leading or following the procession in those things that make for the satisfaction of the worker. There is no formula by which this question can be answered. The management that is on the road to this kind of leadership does not need to be told concerning the details which constitute such leadership. It usually knows also whether or not its leadership is bringing results.

Observation of the coal industry, supplementing observation in several other industries, leads definitely to the conclusion that the responsibility management takes, the wisdom the individual management shows in handling its particular problem, is far more important in determining its day-to-day relations with workers than any general conditions, even such an important condition as the presence or absence of a union. It is really surprising how much wise management can accomplish by just keeping on the job. Holding down a particular job, operating a particular mine, with all that efficient operation in the best sense implies, is after all the first principle of management leadership.

PEACE IN THE COAL INDUSTRY

Peace in the coal industry is not a matter of collective bargaining or absence of collective bargaining; it is not a question of the particular adjustment machinery that obtains at the mine, although these things are important. It is not a question of formulas, procedures or plans of organization. These, too, may help or hinder according to the human understanding with which they are administered.

Broader vision, higher wisdom, stronger purpose, better organization and harder work—these are the chief elements of management leadership which will help mightily in setting the coal industry in order.

Even these elements of leadership, however, cannot be combined into any formula that will give a guarantee of continuing peace. There are many operators who would probably offer the criticism that these things scarcely touch the whole question of the national strike. So far as their direct relationship to the national strike is concerned, this criticism is doubtless just. As we have tried to bring out in our report, however, the indirect effect of relations from day to day, even in its bearing on the general strike, is enormous. If once the coal industry becomes outstanding for leadership in those things that make for advanced standards of management, it is not conceivable that this fact can fail to play a major rôle in determining the outcome of a national strike or threat to strike.

If management leadership does not give a guarantee of peace, it certainly indicates one of the principal roads along which peace must be sought. For that reason the investigators whom the Coal Commission asked to supervise its inquiry into industrial relations set out, in the language of the report, "to discover the wholesome situations that by example could be made the basis of progress. . . . These wholesome situations"—continuing to quote the report—"in bituminous as well as in anthracite, represent the solid pioneering of the industry and they are more important as a basis of progress than the less desirable situations which we shall have occasion to criticize."

This pioneering needs to be vigorously followed up and made the point of departure for the general dissemination of management leadership throughout the industry.

Some Problems in Labor Relations in the Coal Industry as Viewed by Operators

By Rice Miller
President, Illinois Coal Operators' Association

In discussing the problems of labor relations in the coal field, I will attempt to give you a picture of the method of handling labor matters in Illinois, which, in regard to shipping mines, is 100 per cent unionized.

In doing this, it is not my intention to either criticise the United Mine Workers of America, or recommend to any operator employing non-union labor that he unionize his plant, as I believe that every man has a right to work without interference or compulsion, when, for whom, and upon such terms as he may see fit, and while workers have a right to organize for legitimate purposes, that they have no right to interfere with the rights of other workers that do not see fit to join their ranks.

The Urge for Stability of Operation

Some twenty-five years ago, the Illinois Coal Operators, after a series of mine strikes, feeling the necessity of having peace with their mine employes and with the hope of securing more stability of operation, adopted a system of negotiating wage contracts by collective bargaining. This has not been as successful as anticipated, as we still have labor disturbances, but having recognized the right of our employes to bargain collectively and having recognized the United Mine Workers of America, we have endeavored to work out a system of handling disputes that arise at the various mines in such a way as to have enforcement of the contract with as small amount of friction as possible.

I take it for granted you are all more or less familiar with negotiations for a basic wage scale for Illinois with the district and national officials of the U. M. W. of A. This has been done at times at district meetings and at other times, as a three or four-state meeting, but at none of these meetings has a scale ever been negotiated except for the parties that participated in the meeting.

Commencing with November, 1917, every wage scale made with the United Mine Workers of America was completed under Government supervision and the urge of public necessity. The present contract, which expires March 31, 1924, being made at the request of the United States Coal Commission.

After the mining rates and day wage scales have been thus settled, it has been customary—I might say necessary—to negotiate a state contract to cover the various rules and conditions to govern the production of coal in the various mines of Illinois, in which state we have a great variety of methods of mining, as we mine coal from 2½ feet to 10 feet in thickness, by shaft, slope, drift, and stripping operations. To cover all these details, a contract is drawn up consisting of some thirty-two sections with numerous paragraphs, which it was thought would cover every conceivable feature of mining, and there would be no occasion for disagreements at the various mines during the term of the contract.

However, I regret to say that this is not the case. Many disputes arise at the various mines, and therefore we have provisions in our contract for machinery to settle these disputes. These provisions were inserted in the

contract with the view not only of giving justice to both miner and operator, but so there would be no occasion for the miners to strike or the operator to lock out the miner to enforce a demand at a particular mine.

How Illinois Manages Her Mine Disputes

We have, in Illinois, three operators' associations, and as their methods of dealing with the miners are about the same, and we work under the same joint agreement, I will explain to you how disputes arising at mines are handled by the United Mine Workers of America and our Association.

The mines in our state Association are divided into nine districts and each district is represented on our executive board by members selected by the mining companies in the various districts, which board is authorized to handle all matters with the officials of the U. M. W. of A.

The miners have their district officials and executive board, and subdistrict officials as well as local officers and pit committee at the mine to represent them.

Our Association employs six commissioners whose duties consist principally in handling disputes with the miners and advising operators as to their rights and duties under the contract.

It may be interesting to know that the six commissioners employed by our Association are all ex-miners and formerly officials in the miners' organization, so they are well qualified to deal fairly with the many technical disputes that arise.

When a dispute arises at a mine the party involved must first endeavor to adjust the matter with the mine manager, who is the man in charge of the particular mine where the dispute arises. If these two cannot agree on a prompt settlement of the dispute, it is then referred to the pit committee and miners' local president to adjust with the mine manager, and, in case of disagreement between these parties, it is referred to the mine superintendent of the company and the subdistrict president, and if they should fail to agree, it is referred to the commissioner of our Association and the miners' executive board member for the district in which the mine is located. These parties are empowered to examine witnesses, get all the essential facts in the case and adjust the dispute if possible, and, if no adjustment is reached, to refer in writing the question involved and the facts in the case to what is called a joint group board, consisting of representatives of both the operators' and miners' state executive boards.

At this meeting the representatives of both the operators and miners have a right to argue the case, but it must be from facts as presented in the joint signed statement, as no additional evidence can be introduced unless agreed to by the joint executive boards, which have full power to settle all disputes. This board, in settling cases, endeavors to follow these principles:

1. Ascertain from the evidence the facts in the case.
2. Apply the contract to the case as developed by the facts.
3. If no contract provision covers the case, then apply well-established custom at the individual mine.
4. Precedent established in like cases governs the settlement of similar cases unless the previous decision has been protested as a settlement.

Neither party to a controversy shall have the right to appeal any joint decision reached in accordance therewith, but such decision can be set aside by the joint action of the two

executive boards, and either executive board can require a reviewal of the decision by the joint executive boards, and, if not set aside, may protest the decision as a precedent for the settlement of future cases.

In the event the joint executive boards fail to agree on a settlement of the case, it shall be referred to an arbitration board, consisting of one direct representative from each side and three independent members, and if the two direct representatives fail to settle the case, the matter is submitted to the three independent members of the Commission, consisting at present of Mr. Martin Bolt, Director, Department of Mines and Minerals; Mr. Thomas Back, State Mine Inspector, and Mr. W. T. Morris, of DuQuoin, Illinois, an ex-member of the miners' executive board, and any decision reached by the independent members of the arbitration board is binding on both sides.

Under the contract, matters vitally affecting the interests of each organization or vitally affecting the interpretation of the contract, shall be submitted to arbitration only at the discretion of the joint executive boards, but as the contract further provides that independent action may be resorted to only in matters outside of the contract relations, or when the other party refuses to submit to arbitration, you will readily see that provision is made for the final adjustment of all disputes, and as the provision is made that all miners and mine labor and all parties involved shall continue to work, pending final decision, there is no reason for a strike in Illinois except at the expiration of a wage agreement.

STRIKES DO OCCUR DESPITE THE ASSOCIATIONS

I do not mean to say that we do not have strikes in Illinois, during contract periods, but all such strikes are in violation of the agreement and these illegal or, as they are called, "wildcat strikes," are the most annoying feature of our labor relations. Ordinarily, they only affect one mine, but at times spread until a large proportion of the mines in the state are idle—for example, the strike of the day men in 1920.

These strikes are generally due to the action of a few men at the mine who take it upon themselves to ignore the provisions of the contract for settlement of disputes and apply the rule of force. It is only fair to say that these strikes are not sanctioned by district officials of the U. M. W. of A., and they use their efforts to have the men return to work and handle the dispute in accordance with the provisions of the contract.

HOW FINES ARE COLLECTED

However, these strikes are the cause of a great deal of unnecessary expense to the operator, and the public as well, but until the individual miner regards the contract as a sacred obligation binding on him and remains at work pending settlement of the dispute, we will still have these disturbances, notwithstanding the fact that there is a penalty of $3 per man for the first day and $1 per man for all succeeding days where men are guilty of striking in violation of the contract. The provision for the collection of this fine is as follows:

In the event that the mine is thrown idle in violation of the contract, it is the duty of the operator to take up the matter with the local officials of the miners and, if they fail to agree that the contract has been violated, the case is referred to the various courts of the joint organizations, as any other dispute, and finally reaches the group boards. A hearing is had on the evi-

dence and, if it is found that the men have violated the contract in throwing the mine idle, a motion is adopted so stating, and it is then the duty of the operator to collect the fine from the individuals violating the provisions of the contract. Should the joint boards fail to agree as to whether the contract has been violated, the question is then referred to the arbitration board, which has the right to decide whether said contract has been violated, but has no authority to assess or remit fines.

After the fine has been collected in accordance with provisions as enumerated, the miners may have the case investigated and ask for a refund of the fine, but the fine cannot be refunded unless it is mutually agreed by both representatives of the operators and miners that the refund shall be made. Therefore, where the operator declines to refund the fine, the case is ended. Very few fines are refunded. These fines when collected are paid one half to the Operators' Association and one half to the State Treasurer of the U. M. W. of A. There is also a provision which assesses a penalty of $2 for each employe on any operator failing to collect and forward to the proper parties these fines after it has been decided that the contract has been violated.

DIFFICULTIES ARISING FROM MISUNDERSTANDING CONTRACT

A great deal of labor trouble at mines is caused by the fact that men are not familiar with the contract, and make no effort to understand its provisions. For example—we frequently have cases where men are discharged for refusing to obey the orders of the mine manager although the provisions of the contract clearly say:

> The right to hire and discharge, the management of the mine and the direction of the working force are vested exclusively in the operator, and the U. M. W. of A. shall not abridge this right.

One of the difficulties that we have to deal with, and which increases the cost of coal, is the practice of men voluntarily absenting themselves from work when the work is available, which necessitates carrying more men on the payroll, or suffering from loss of tonnage.

While a section of our contract provides that men may be discharged when they absent themselves from work for a period of two days without the consent of the company, or in case of proven sickness, many men take advantage of this clause by absenting themselves a day at a time, and, if for a longer period, it is not difficult to obtain a doctor's certificate for sickness.

CLEAN COAL

In order to market the output of a mine, it is important to have a uniformly clean coal, and we have found the miners at the face neglectful in the matter of properly removing the impurities from the coal before loading it into pit cars. We have a provision of the contract providing penalties for loading dirty coal, and inspectors for passing on and assessing docks, but we do not have the hearty coöperation of the individual miner in this matter, although the matter of clean coal affects his working time, through the inability of the operator to market the coal on account of improper preparation.

A CERTIFICATE OF COMPETENCY AND QUALIFICATION NECESSARY

Among the mining laws of the state of Illinois is an Act which provides that no person shall be employed or engaged as a coal miner in a coal mine in the state without a certificate of competency and qualification issued by the

Miners' Examining Board, and under the state code the qualifications for a member of the Miners' Examining Board are that he shall have five years' practical and continuous experience as a coal miner and shall be engaged continuously in mining coal in Illinois for twelve months preceding his appointment. As all miners in Illinois belong to the United Mine Workers, it follows that no one can get a certificate to mine coal who is not a member of the miners' union.

CREATION OF A MINING INVESTIGATION COMMITTEE

For years, at each session of the state legislature, numerous bills were introduced concerning the mining industry. These bills were good, bad and indifferent, so in order to have proper laws, a bill was finally passed by the legislature creating a Mining Investigation Commission, consisting of three members representing the operators, three members representing the miners and three members representing the public. This Commission is empowered to investigate matters in relation to coal mining, and to agree and recommend to the Governor and legislature laws which, in their judgment, are proper. The members representing the operators and miners receive no compensation, but members representing the public are paid *per diem* by the state and all members receive their expenses. Since the passage of this law, only such legislation affecting the mining industry as agreed to by the Commission has been passed, and all recommendations have been unanimously approved by the members of the Commission, and we consider that their work has been beneficial not only to the coal industry, but to the general public as well.

ON APRIL 1, 1924

You no doubt are interested in what will be the outcome of negotiations for a new contract to take the place of the one which expires March 31, 1924. I wish I could look into the future and tell you what will take place on April 1.

It is impossible to do this, but I do know that the Illinois coal operators want a working agreement and wage scale with their workmen that is fair to the miner, to the public and to the mine operator, and that is competitive with wage scales paid in other coal mining districts, and other industries in this country, and hope we may obtain this without any suspension of work or inconvenience to the public.

Labor Relations From the Standpoint of the Union

By Francis J. Drum
President, District 16, United Mine Workers of America

THERE are some things stated in this volume with reference to the United Mine Workers of America, upon whom the miners depend, that I, from a union point of view, agree with. As to the question of leadership referred to in a previous article,[1] I may state that we have no objections to some of our good men going to the other side if they see fit to do so, because they understand the things that the workers have to contend with; and, if they retain their spirit of fairness, it will be helpful to the worker and to the industry. Thus, the other side will have a better leadership interested in the subject of mining. This leadership will be beneficial to the miner in the negotiating of contracts and will be very agreeable under those circumstances. It may be that many of those fellows who have gone to the other side and have become commissioners, etc., constitute a very agreeable factor to the union men. However, some of these gentlemen may be just as contentious as men on the other side. But taking them as a whole, they are pretty good fellows.

Value of Contractual Relations

The point I want to stress here is contractual relations, and I do not think there is anything that can take the place of it. From a union standpoint, there is nothing yet that has been originated that will in any way take the place of contractual relations between employer and employe. It is the only hope, as I view it. As it is not a divine institution, of course, troubles may arise from time to time. It is true that even with the contract we have a few strikes in violation thereof. Those things are usually attributed, however, to the workers' side. And I am sure, from my own experience, and that of many of my colleagues in the labor movement, that we have violations on the other side as well. Therefore, we have to put up with human frailties; but, as we know, nothing has been devised thus far that will take the place of contractual relations.

Now, why should we have contractual relations? We have embodied various subjects in contracts for miners such as wages, hours of labor, dead work and also other things connected with labor and the mines. If there were not contractual relations governing those subjects, naturally there would be more trouble than there is where those contracts are in existence.

I am going to speak of the non-union field — Maryland. Unfortunately, it has never been unionized to the extent of recognition. It is the only old English-speaking mining district in the country. Descendants of the old miners, who settled there in early days when coal was first produced in America, are now engaged in the same occupation. We are unfortunate in that the controlling mine factors have never recognized the union there. I think it is a mistake. But we cannot help it. I am going to say a few words from this point of view, coming as I do from a non-union field.

We have been on strike there twenty months. I do not suppose the strike will last much longer from what I learn.

[1] See page 108.—Editor.

That is unfortunate, too. But I have this in mind, that in the non-union fields there are no conditions that compare with those in the union fields. If you had the opportunity to go into those sections of the country and see the conditions that exist in those mines, you would certainly not wonder why it is that the union miners are always interested in having a contract, because the things that I have reference to—hours of labor, wages, etc.—are so often subjects of infringements—the reason for so much trouble and discontentment. Now, that does not obtain in the field where there are contracts covering these subjects. We have a few individual mine contracts where things go along as smoothly as possible where human beings are concerned. But where there are not contractual relations, there is always trouble.

It seems that generally mine managers try to take advantage of the helpless employe in such ways as in dead work or in some other financial consideration, in order to make a good showing for his company and thus boost himself. This is the way it is done. The manager gives orders through one of the bosses to cut the expense wherever possible. The boss will agree with the miner to perform this work for a certain consideration before the miner knows just what work it will entail, and most probably that man will be clipped ten cents on the yard or work a half hour to one hour over the usual workday for which he will receive no extra compensation. Too, the sanitary conditions are usually bad, and no efforts are made to remedy the same for fear of creating a little expense. Hence, the worker has to suffer, because in many cases, if he complains, he is summarily dismissed. So it is evident that where contractual relations exist, as referred to in the previous article,[2] these injustices do not obtain. Now, that is, my experience; and I know that is the experience generally in the union fields.

There is more than that to attend to. You take the mine workers of the country. They have dependents to look after as well as have men in other industries. The miners are eager to try to maintain their families properly and raise their children as children should be raised.

I want to tell you that a miner is a *hero*. A man who will go underneath the ground the way he does and make the sacrifices he does for his family, at the same time helping civilization and keeping you people comfortable, certainly is a hero; and he ought not to be neglected. I claim, from a union point of view, that that man should get a wage commensurate with the American standard of living. And that is what the union is trying to establish. I can go back thirty years and mention some things that will be of interest to you.

Those are the facts, and that is the reason the miners are so jealous of their union and of contractual relations because they know if they do not have contractual relations those infringements take place. They want to see their family properly taken care of and their children educated, and that is the reason I say that a man like the miner, who goes under the bowels of the earth and makes the sacrifice he does for his family and for civilization, should not always be knocked out on the question of wages.

THE PUBLIC INTEREST

It may be true—I guess it is true—that many investments are probably wrong investments. And along this line we often hear much about the public. I am sure if the public understood

[2] See page 115.—EDITOR.

it generally that they would not exact from the poor fellow who goes underneath the ground the last farthing needed for his existence. I believe the public is undoubtedly generous; and, for that reason, I think they are not all conscious of the conditions that miners have to contend with.

Now, from a union point of view, the public *ought* to be educated to those things. If they are not, every time a question arises about a renewal of contracts, the press of the country refers to the "dear public." Now, my view of the situation is that the operator should have a proper percentage on his investment, and the worker should have a living wage—a wage commensurate with the American standard to enable him to educate his family properly and at the same time be able to lay aside a little for the rainy day. I may state to you that I know lots of miners in years gone by who, if it were not for their sons and daughters, would have had to spend their old age in the poorhouse due to the poor wages and conditions of employment in those years.

The public should display more interest in the lives of the miners. I am not complaining about investigations. These things have some good effects. There is no question about it. The matters I have alluded to in the life of the miner should be thoroughly and properly investigated so that he will be given a square deal.

WHAT THE UNION HAS DONE

Back in the Maryland fields and up through northern east Virginia, those miners have never enjoyed contracts like those elsewhere;[3] and I am going to show you where for a few years when there was a basic agreement in existence that even this bettered their conditions. I may state back in 1918 in the two or three counties in the northeastern part of West Virginia coal was never weighed. The miner was paid so much per car—and not so much per ton per car as was in effect prior to the strike of 1922. Now, those miners became organized; and, finally, under the laws of the state were entitled to put a checkweighman on the tipple where the scale is installed. At this time, allowing the miner so much per car has been abolished; and it could not have been done if it were not for the fact that the miners had become organized. I am certainly glad that the Fact Finding Commission has recommended that there be checkweighmen placed on each tipple where coal is weighed so men can be protected and receive just weight for the coal they mine.

We come down along the line into Maryland. The same condition prevailed. I want to explain to you what the union did for the miners in the Georges Creek region in Maryland and what the power of the union has done to relieve some things which had happened. The world should know these things. I remember that for years there was complaint as to short weights in the Maryland field. In 1917, the miners there became organized and had investigators from the Interior Department come up to the mining region and examine the scales at several mines. They found a discrepancy of from 80 pounds and 110 pounds to 620 pounds on each car of coal loaded by the miner. That means that the miner was robbed of that much just weight on each car of coal mined, he being paid so much per ton. The outcome was that the coal companies committing these outrages were indicted by the grand jury. The one who robbed their employes of the 620 pounds on each car pleaded guilty and paid a fine. Then the miners through

[3] See page 115.—EDITOR.

their attorneys sued for an accounting, and the result is that the cases are pending in court today. If the union had been in existence in that field at the time these injustices took place they would not have been committed. It seems to me every mine owner ought to have in mind this one point, that a union is a check to wrongdoing. Of course, this is not applicable to all coal companies. I think the union is a blessing wherever it is established. And I know it is true that there are often small mistakes made; but, so long as man deals with man, there will be some little contentions. So why blot out the union?

Here is another factor that causes some trouble in mining communities: The fact that so many languages are spoken in one mining camp. You can imagine how difficult it is to explain to people, among whom probably nine languages are spoken, the contractual obligations; they must be educated to them and this requires time. The miners' organization accepts this responsibility, as it is a rule of the organization to have every miner who is a foreigner become a citizen of the United States. Thus, there are many things that the union has done and will continue to do that brings about good relations in the mining fields.

I am going to state to you an experience I had which I think would be of interest to you: From the 80's to the 90's—1884 to 1900—in one of the mines in Maryland, where I worked for more than 20 years, whenever anyone was fatally injured or killed, it was the duty of somebody to volunteer to take up a collection in the mine for the purposes of defraying the burial expense and to help the family of the deceased, or, if only injured, to give the family some assistance. This often fell to my lot, and I said that if the opportunity ever came my way I would try to have a law enacted whereby the state would take care of these things. The opportunity came. In 1902, I was a member of the Maryland House of Delegates. We introduced and passed the first compensation law in America. We got along well with that for a while. The unfortunate thing about it was that the great railroads and coal corporations objected to it; and, in 1908 or 1909, a judge termed it unconstitutional. Of course, if he were living in this enlightened age, surely he would not have so termed it. This is one of the things that mine workers have been interested in, and I want to state I think that Maryland was the first state in the union to adopt a compensation law.

Now, I merely mention these things to you from a union point of view. The mine workers have a great responsibility, and I think they are people who are able to take the responsibility. If they are right, they usually maintain that they are right. And I have not yet seen them in a general question being wrong. It is very true—undoubtedly true—that many people will not admit this but it is a fact, nevertheless.

To refer again to leadership. I think the miners' organization has been blessed in that. Those men have done everything that was possible to benefit and advance the interest of the miner, and I hope that the future of the organization will be blessed with the same high-class leadership.

The most hazardous of occupations is that of the miner, and there must be a union to protect him. Generally where dollars are at stake there is a tendency to take advantage, and that is why I say the miners' organization has, so far as I understand it, done everything well. They try to get the best they can for their people, because

they certainly deserve it. There is no question about it. The man under the bowels of the earth, away from the daylight, ought to be well considered. He should not be looked upon as mere chattel, but a human being. I remember when we worked twelve hours, then eleven, ten and nine to constitute a work day in the mine. But as a rule the work-day now is eight hours. I have experienced this in thirty years. So you can see the miners' organization has made strides; and they have not done it, I am sure, at the expense of citizenship.

My contention is that where there is a shorter work-day—and it is proven, I am sure, by those gentlemen who own mines—there is more efficiency. Also, where men are unionized efficiency excels. In a non-union section, a man's soul is not his own. There can be no efficiency where there is fear or where a man is afraid of losing his job for some little minor thing. The only place where there is efficiency, and I am sure that that is proven in the Fact Finding Commission's reports, is in the union fields.

Let us take the turnover, for example. I think, if I understand it correctly, that there is 25 per cent less turnover in the union fields than in the non-union fields. So that in itself shows to you that the union protects. Those operators maintain the best class of men. At least that has been my observation in the union and non-union fields where I have had experience.

We think the mine workers' organization is a wonderful institution, and that it has done a great deal for humanity, and will continue so to function. And I could never understand why great corporations should be opposed to it and not be willing to get together with the miners' organization and enter into contractual relations which would be beneficial to all.

Where the Consumer's Dollar Goes

By Walter Durand

Formerly an Assistant Chief Economist of the Federal Trade Commission, in charge of coal investigations.

EVERY commission and every expert seems to agree that there is no simple answer to the coal question. So with that part of the coal question assigned as the subject of this paper, there is no simple answer. Not in figures at least. It is hard to trace the coal consumer's dollar back to the mine. It is impossible from any statistics that have been gathered to make a satisfactory approximation of the number of cents that go to the various factors between the coal in the ground and the coal in its ultimate bin.

Yet broadly the question can be answered; not quantitatively, but answered in the sense that we can point out that too much of it goes here, too much of it there, too much of it yonder. From the studies of the Coal Commission we can reach a conclusion as to what pockets are big with unreasonable profits and see broadly where the "rule of reason" will have to be applied if the consumer's dollar is to go further than it does now.

With a gap in the data because of the fact that the Coal Commission's reports on cost, investment, and profit of bituminous operators are not yet released, I shall try to state in this paper the facts now available on the subject, and my conclusions therefrom, regarding the retailers and wholesalers who handle both hard and soft coal, and regarding the hard coal operators. Absence of data on the soft coal mining profits throws the emphasis of my paper unavoidably on the anthracite situation.

When last August the ten per cent wage increase granted the anthracite miners was conceded to amount to forty cents a ton on the entire tonnage, or sixty cents if all of it were added to the domestic sizes, Governor Pinchot reached the conclusion from the figures then available that the mine operators could reasonably absorb ten cents per ton of this increased cost and the railroads and wholesale and retail dealers the remainder of it. The operators increased the mine price, not fifty cents, but seventy cents to one dollar per ton, it was said, and the dealers, so far as is known, passed the increase on.

Now that the Coal Commission's full report on anthracite mine investments and profits is available, the question recurs, and every anthracite consumer is asking it. Was the increase in price justified by the wage increase, or could the consumer's dollar have been reasonably spared part or all of this added strain upon it?

To answer this question in brief, it appears on the basis of the official determination of their profits in recent normal years, which were probably no more profitable than 1923, that:

(1) On the average, the railroad coal operators as a group could have absorbed the entire increased cost due to the Pinchot strike settlement and on top of that could have reduced average prices of domestic sizes (excluding pea) at least seven cents a gross ton, and still make six per cent on the "estimated original cost" of their investment. Since instead of cutting prices seven cents they increased them by

seventy-five to ninety cents, averaging about eighty cents' increase, they could reasonably reduce their present prices on the above basis by an average of eighty-seven cents a gross ton. The independents could not do as well.

(2) On the average, the wholesalers and retailers, if they have passed on the increased mine price, could now reduce their aggregate prices of all sizes of anthracite and bituminous twelve cents a gross ton, and still make ten per cent on their investment, and if they confined their entire reduction to domestic sizes of anthracite, could reduce their prices still more. Of this twelve cents, eleven cents would be the retailers' reduction.

(3) If the railroad coal companies, wholesalers and retailers were content with these rates of profit, consumers' prices on domestic sizes of "company" anthracite (excluding pea) could therefore now be reduced at least ninety-nine cents, or roundly at least $1 a gross ton.

(4) If eight per cent on estimated original cost were allowed operators in the calculation instead of six per cent, the reduction in the operators' prices could be seventy-six cents, and in consumers' prices eighty-eight cents a gross ton.

(5) Even on the appreciated book value of the operators' investment six per cent would still allow them to reduce prices sixty-six cents, which with the dealers' reductions on a basis of ten per cent return would reduce consumers' prices by seventy-eight cents. An eight per cent return on operators' book value, with ten per cent for dealers, would reduce mine prices forty-eight cents and consumers' prices sixty cents a gross ton.

The above calculation is conservative in that it omits a railroad coal company with a very large tonnage, the Glen Alden Coal Company, associated with D. L. & W. interests, whose financial results the Coal Commission was unable to include in its tabulations because the figures could not be made comparable, but which is described by the Commission as one of the lowest cost companies.

The calculation is further conservative in that my estimate of original cost of investment, derived by deducting revaluations identified by the Commission from its figures of book value, is probably much above the actual amount invested, while the amount of profit is understated probably as much as ten cents a gross ton because most of the companies have charged depletion and depreciation on the appreciated values instead of on cost and have thereby concealed the true amount of profit.

The calculation is further conservative in that the investment includes great future reserves of coal lands that will not be mined in this generation and in that the charges paid in interest and taxes for carrying these reserves are deducted from the figures of profit shown. The Lehigh Coal & Navigation and the Reading have especially vast reserves.

All this is without consideration of reduction in anthracite freight rates, the reasonableness of which is now under review by the Interstate Commerce Commission, upon the urgent recommendation of the Coal Commission.

The reduction of railroad coal company mine prices by the average amount above indicated would bring each company down to a uniform rate of profit, but would involve the charging of different prices by each company for coal of the same grade. If dealers passed these differential prices on, it would mean different prices to different consumers for like quality. The only way to accomplish the reduction and at the same time make a uniform price

would be to adopt a pooling plan. If the low-cost companies continue their present system of charging approximately the same prices as the reserve-burdened Reading and Lehigh Coal & Navigation, they will continue to make excessive differential profits. Under this system the only way for the public to recoup is to tax these differential profits to the full amount of the excess over a uniform reasonable rate.

The above results are derived directly from the facts made public by the Coal Commission. Whether returns of six per cent for the anthracite operators and ten per cent for the dealers are reasonable and sufficient at this time under all the circumstances shown by the Coal Commission's report, is a question for individual judgment after studying those circumstances. Personally I regard them as reasonable.

STATISTICAL ABSENCE OF A CONSUMER'S DOLLAR

While the results just summarized have ample statistical support, that support as stated at the outset is not in a form that makes possible an exact analysis of the consumer's dollar. Statistically there is no coal consumer's dollar to start with.

The Coal Commission's report, giving average results for two hundred seventy-three identical retailers in each of the past five years, shows their margins but not their prices. This retail study, covering ten to twelve million tons a year, or about one tenth the estimated tonnage that is retailed, is the most comprehensive ever made. Yet it does not give us the prices, without which a coal consumer's dollar cannot be statistically set up.

For certain dealers in certain cities the report gives prices for certain sizes, but they are not average prices of *all* sizes and therefore cannot be used.

Even if we had prices, or tonnage and money received for it, there would be no meaning in the figures unless there was a complete separation throughout the accounts between anthracite and bituminous coal. We should also have to have the anthracite freight bill separate from the bituminous, separate figures of the amounts spent for costs of handling, and finally a separation of investment, surplus, and other financial items between the two kinds of business. Very few of the dealers could be expected to segregate all these figures on their books. Many would have part of the items separately no doubt, but would combine others. So neither a consumer's anthracite dollar nor a bituminous dollar is to be hoped for.

One might consider building up the consumer's dollar in each kind of coal by taking the operator's average sales realization and adding the wholesaler's average margin and the retailer's average margin, but there is no average figure for freight. And in any event the complexity of the coal business forbids. For again both wholesalers and retailers commonly combine the two kinds of coal. Moreover, no sufficiently accurate way could be found to take care of the fact that only part of the coal goes to the retailer via the wholesaler, the rest of it going direct from the mine. Nor could one give effect to the fact that in both kinds of coal, especially bituminous, large tonnages included in the operator's sales realization go to railroad, public utility, and manufacturing consumers without intervention of a retailer, and often at lower prices than the retailer pays. In any event, at the present time the Coal Commission's cost and profit report for bituminous operators has not yet been released.

Though we must give up the quest for statistics of the consumer's dollar

ANTHRACITE AND BITUMINOUS RETAILERS

(Average of 273 dealers)

Ton of 2,000 pounds

	INVESTMENT PER TON	GROSS MARGIN	NET PROFIT PER TON	PER CENT ON INVESTMENT
1918–1920	$2.430	$2.118	$.457	18.8
1921	3.312	2.512	.476	14.4
1922	3.538	2.389	.410	11.6
1918–1922	2.803	2.244	.452	16.1

in any exact sense, there are in the Coal Commission's published reports some illuminating figures bearing on the subject so far as retailers and wholesalers are concerned, and so far as anthracite operators are concerned.

RETAILERS

First, let us look at the two hundred and seventy-three anthracite-bituminous retailers. The Coal Commission shows their tonnage, and their average investment, gross margin, and net profit, all on a per ton basis, and side by side with this, the per cent of profit on investment. These figures are for each of the five years 1918 to 1922. The tonnages of the five years were, respectively, 11,935,331; 11,080,556; 11,502,298; 11,592,769; and 10,188,034. These are net tons of 2,000 pounds.

Using these tonnages I have computed a weighted average for the first three years combined, and for all five years combined; and these results, together with the figures for 1921 and 1922 separately, are as shown in the table on the following page.

If my computations of the averages are correct, we have here the fact that in the three years 1918, 1919, and 1920 when the business of the country generally was very profitable, the coal retailers of the country were making an average of nearly nineteen per cent; that in 1921 when general business was largely prostrate, they were making over fourteen per cent; and that in 1922 when the country was recovering from depression but when the coal dealers' total tonnage was considerably reduced by the anthracite strike, they were making between eleven and twelve per cent.

Now if, under the "rule of reason," ten per cent be considered a fair return in the business of retailing coal—a business not involving any great risk as now conducted, we are in a position to calculate from the above figures how much the profit would need to have been, in any of the periods, in order to yield ten per cent on the investment. The difference between this assumed reasonable profit and the actual profit is the assumed excess of profit beyond what is reasonable. This figure, put on a per ton basis, represents the average amount by which the dealers; under this assumption, could have reduced the price of coal to the consumer.[1]

These are the amounts thus arrived at for the periods named:

[1] By multiplying the tonnage by the profit per ton one gets the total amount of profit during the period, and a similar multiplication by investment per ton gives the total investment. From the actual profit one can then subtract the assumed reasonable profit of ten per cent of the investment, and the difference is the assumed unreasonable profit.

1918–1920, profit over 10 per cent return, 21.4 cents, roundly 20 cents a net ton.
1921, profit over 10 per cent return, 14.5 cents, roundly 15 cents a net ton.
1922, profit over 10 per cent return, 5.6 cents, roundly 5 cents a net ton.
1918–1922, profit over 10 per cent return, 17.2 cents, roundly 15 cents a net ton.

Much support might be given for the view that 1923, even before the recent increase in anthracite prices, was proving a much more profitable year for the dealers than 1922. Is it unreasonable to conclude that the average dealer, before the recent strike could have reduced his average sales realization by ten cents a net ton, which is eleven cents a gross ton?

Perhaps, instead, some of us would incline to congratulate the coal retailer that he has not been making twenty-five to thirty per cent on his investment instead of around fifteen. Indeed the showing of profit is not so excessive as many people have conceived. Yet if there is eleven cents' worth of unreasonable profit it would be better in the pocket of the consumer than in that of the dealer.

Whatever conclusion the reader accepts he should remember that this is an anthracite-bituminous eleven cents, spread over all kinds and sizes of coal. There are no figures to show what reduction could reasonably be made on any particular kind or size.

WHOLESALERS

Next, we may look at the wholesaler, or jobber, defined as one who buys and sells cars and barges of coal without physically handling them over docks or trestles or in a coal yard. The general figures for the wholesaler in the Coal Commission's report, like those for the retailer, cover both anthracite and bituminous business, though certain smaller or localized groups dealing mainly or entirely in anthracite are shown. The main tables cover a ten-year period, with ninety companies reporting for 1913 and four hundred and twenty-four for 1922. Through the ten-year period run eighty-four identical companies, handling an aggregate of from thirty-five to fifty million tons a year. It is these eighty-four identical companies that I will

ANTHRACITE AND BITUMINOUS WHOLESALERS

(Average of 84 companies)

Tons of 2,000 pounds

	Tons Handled	Investment Per Ton	Gross Margin	Net Profit Per Ton	Per Cent of Profit on Investment
		Cents	Cents	Cents	
1913–1917	224,436,636*	20.8	12.2	5.5	26.5
1918–1920	139,982,573†	28.7	19.4	9.4	32.6
1921	36,570,964	52.1	17.0	3.5	6.6
1922	39,633,355	43.1	19.4	6.7	15.6
1918–1922	216,186,892	35.3	19.0	7.9	22.3
1913–1922	440,623,528	27.9	15.5	6.7	23.9

*1913: 40,527,625 tons. 1914: 39,148,610 tons. 1915: 43,248,040 tons. 1916: 50,289,107 tons. 1917: 51,223,254 tons.

†1918: 40,170,000 tons. 1919: 41,658,418 tons. 1920: 49,154,155 tons.

choose to represent the wholesale coal situation.

They are a representative group, for their average investment, gross margin, profit per ton and on investment follow the general trend of those for all the companies. Their margins are in all years slightly less, their investments per ton in the early years slightly less and in the later years somewhat more than those of all companies, their profit per ton varies very slightly from that of all. Their profits on investment, though exceedingly high, are considerably less on the whole than in the case of the entire number of companies.

The results are grouped so as to show the first five years (1913–1917) as a single period, and for the remaining time to show the same periods as are shown above for the retailers.

It will be observed that for the entire ten-year period these companies averaged the excessive rate of 23.9 per cent a year on their investment, doubling their investment about every four years. The year 1921 with 6.6 per cent on investment was the only low profit year in the entire ten years. The next lowest was 1922, and the highest was 1920 with forty-nine per cent.

It will also be observed that the average net profits per ton in the different periods were never as high as ten cents a ton. The range was from an average of 9.4 cents in 1918–1920 to an average of 3.5 cents in 1921. The profits for the single year 1920 (not shown in the table) were 15.2 cents per ton, the highest in the decade. The fact is that the wholesaler's investment per ton is so small that in the ten years' average he has needed less than three cents a ton net profit in order to make ten per cent on his investment.

Hence, while these relatively small profits per ton have netted excessive returns on the investment, the reducing of returns to a reasonable rate would save the consumer, on the average, only a very few cents a ton in the price he pays.

Figuring on ten per cent as a reasonable return on the investment, and making calculations such as have been explained in the case of the retailer, the unreasonable excess of profits per ton appears as follows for the periods covered, the figures showing the amount by which the wholesaler's margin or prices could have been reduced, on the average, if he had made only ten per cent:

1913–1917, profit over 10 per cent return, 3.4 cents per net ton.
1918–1920, profit over 10 per cent return, 6.5 cents per net ton.
1921, profit over 10 per cent return, . . .[2] cents per net ton.
1922, profit over 10 per cent return, 2.4 cents per net ton.
1918–1922, profit over 10 per cent return, 4.4 cents per net ton.
1913–1922, profit over 10 per cent return, 3.9 cents per net ton.

On particular sales where a wholesaler makes a gross profit of one dollar and indeed sometimes up to five dollars a ton, it is obvious that the percentage of return on investment if all sales were at such margins would run into almost fabulous realms of profit, for with a ten-year average gross margin of only fifteen and a half cents they made nearly twenty-five per cent on their investment. It is because the majority do not take these repugnant margins, or take them on relatively few transactions that the average net profit comes under ten cents a ton, in the highest period. In fact outrageous margins, measurable in dollars instead of cents, cannot be

[2] The average price or margin actually obtained would have had to be raised 1.7 cents per ton in order to net 10 per cent on investment.

taken by the wholesaler except in times of coal panic.

But the 1913–1917 average profit of 26.5 per cent on investment and of 32.6 per cent for 1918–1920, and the ten-year average of 23.9 per cent indicate that even the margins normally and regularly taken have been excessive.

The American Wholesale Coal Association has formally urged eight per cent on the selling value of the coal as a fair standard margin, but the Coal Commission's report sharply negatives this contention. It shows that the three hundred and thirty-three wholesalers reporting for 1920 averaged in that year a gross margin of less than six per cent on sales, yet made fifty-five per cent on their total investment and 66.6 per cent on the proprietor's equity. The report adds:

> From this showing it would appear that with margins of 8 per cent, the figure advocated by the American Wholesale Coal Association, the entire wholesale trade, and particularly the wholesalers handling anthracite would make exorbitant profits. Such a margin would be neither necessary or desirable.

The Commission shows that in each of the ten years the actual average percentage on selling value for the entire number of companies reporting ranged between five and six and a half per cent. And even these modest appearing percentages gave excessive profits on the investment—profits ranging from fifteen to fifty-five per cent except in 1921.

It is obvious, therefore, that the wholesale trade if it desires to conform to a "rule of reason" should abandon the idea of eight per cent on sales. Instead it should not only forego altogether the panic margins that are inexcusable from any point of view, but in addition should reduce even its normal margins somewhat.

If such a course were followed, what reduction could be made in the wholesaler's gross margin, and passed on by the fair retailer in the form of lower prices to the consumer? In exceptionally distressful times the reduction could be very large on many particular shipments; on the average, however, it could be but a few cents a ton.

To go back to the eighty-four companies, it has been seen that in 1922 their excess profit over a basis of ten per cent on investment was but 2.4 cents per ton. A similar computation for all the four hundred and twenty-four companies reporting in 1922 shows a four cents a ton reduction as possible on the ten per cent basis,[3] for in that year they were making 21.8 per cent on their investment, while the eighty-four companies were making 15.6 per cent.

Considering all the factors—the profits of 1922, the long history of excessive profits before that, the probability that 1923 up to the time of the anthracite strike was a better year than 1922—is it unreasonable to conclude that before the strike the wholesalers could have reduced their charges, on the average, four and a half cents a net ton, which comes to five cents a gross ton, without serious hurt either to their pocketbooks or their consciences? The method of reaching such an average reduction would be, as suggested, to cut out all the instances of "high binder" margins and in addition to reduce somewhat the margins customarily charged on the bulk of the business.

[3] The investment of the 424 companies, computed from the Coal Commission's report, was approximately $38,099,000. Their actual profit, $8,327,000; on a 10 per cent basis it would have been $3,810,000; and the excess of $4,517,000 spread over their entire tonnage of approximately 114,069,000 tons, would come to just a fraction under four cents a ton.

FREIGHT RATES

On the reasonableness of coal freight rates at the present time there is little definite basis for comment. There would probably be difficulty in getting any agreement as to what the amount of the average freight bill is per ton, the country over, for either anthracite or bituminous coal. But in both kinds, and especially in anthracite, freight takes a large proportion of the consumer's dollar.

In the Coal Commission's preliminary report of July 9, 1923, on the anthracite industry, the Commission stated the results of a study of the consumer's dollar spent for stove coal in Boston, New York, Philadelphia, Washington, Chicago and St. Louis in November, 1922. Out of the consumer's stove-coal dollar in these respective cities in that month, the following amounts went for freight on this size of coal:

Boston: Freight, 23 cents per dollar paid for stove coal.
New York: Freight, 18 cents per dollar paid for stove coal.
Philadelphia: Freight, 16 cents per dollar paid for stove coal.
Washington: Freight, 20 cents per dollar paid for stove coal.
Chicago: Freight, 30 cents per dollar paid for stove coal.
St. Louis: Freight, not stated.

These figures, while not representative of all anthracite, indicate vividly the importance of freight in the country's total bill for this kind of fuel. For the answer as to whether the anthracite freight bill could be reduced without injustice to the carriers we must await the findings of the Interstate Commerce Commission in its present inquiry, which was started on the urgent recommendation of the Coal Commission. On bituminous coal, the Interstate Commerce Commission's last general consideration and adjustment of rates in the western territory was concluded in June, 1923; and in Central Freight Association territory, in 1917.

ANTHRACITE OPERATORS

We now come to the mine operator and inquire about the reasonableness of the share he takes of the consumer's dollar.

The Coal Commission's report on costs, profits and investment of the bituminous operators not yet being available, it seems best to omit consideration of bituminous operators at this time. The Federal Trade Commission in 1922 issued a valuable preliminary report on *Investment and Profit in Soft Coal Mining*, but due to the injunction in the Maynard case the companies covered were by no means so numerous as those covered by the Coal Commission.

For anthracite operators the Coal Commission's report furnishes a great deal of important information never before produced by a governmental agency—especially the information regarding investment and profits, by which the reasonableness of prices is mainly to be judged.

The method of the Coal Commission in its study of investment and profits was to state facts, but not to itself draw any broad conclusions as to the reasonableness of the profits nor indeed as to the basis on which reasonableness ought to be judged. In this it was no doubt wise. It leaves people free to make their own conclusions on these most vital questions.

But the Commission does reach a number of conclusions regarding the anthracite industry which bear directly on the reasonableness of profits and show some of the places where parts of the consumer's dollar go without any proper return in service rendered. Let

us restate briefly the substance of some of these findings as a basis for further consideration of the problem.

1. There is and can be no free competition in the anthracite industry because the supply is limited and controlled, the mining is concentrated largely in a few railroad coal companies, with a long history of combination. (Report of July 9, 1923.)

2. "In the anthracite industry market value depends upon the profits and prices of anthracite for the past 25 years and has been influenced more or less by the operations of what the Supreme Court of the United States has declared to be a combination in restraint of trade and in violation of the commodity clause of the Interstate Commerce Act." (Report "P," released Nov. 10, 1923, p. 7.)

3. The market value of the investment in the anthracite industry is estimated by the mining engineers at $989,000,000; and the book value the Commission places at about $800,000,000 or, with working capital included, $640,000,000. The Commission refused to make any estimate of original cost, but it identified revaluations of $226,000,000, which if deducted from the book value would indicate an estimated original cost (plus working capital) of probably not over $414,000,000. (Report "P," p. 16.)

4. Great tonnages of coal reserves that will not be mined in this generation are included in the above values and cost of investment. Speaking of the Reading, the largest holder of such reserves, the Commission says: "The American people . . . do not believe it is an inherent right of any corporation to embark on a two-hundred-year speculation in land and ask the public to pay the cost of carrying it, out of the present price of coal." (Report "P," pp. 14-16.)

5. "Because of great inequalities in cost and in selling arrangements some operators make very large profits and others very small profits. The margins per ton between cost and sales realization in ordinary times range from less than nothing to over $2 a ton. The per cent return on book value of investment in coal ranges all the way from a loss to 138 per cent (one independent operator, year 1917)." (Report "P," p. 16.)

6. "The profits are increasing. Total net income is increasing, and surpluses are increasing, earned surplus as well as surplus arising through revaluations. The margin per ton is increasing." (Report "P," p. 16.)

These broad generalizations taken together with the specific facts given in the report have an obvious bearing on the question of the reasonableness of anthracite profits and of the prices from which the profits are derived.

I believe that the facts clearly justify the conclusion that under the "rule of reason" many of the railroad coal companies could have very materially reduced their prices even on the book valuation; and, with the separation of investment in vast reserves of coal, all of them could have done so. On the basis of estimated original cost of the investment they could have reduced prices still more sharply.

I am one of those who believe that the original amount invested is the most reasonable basis on which to judge profits. I do not push the argument, of course, to the unreasonable extent of going back to the Lehigh Coal & Navigation Company's original ear of corn or its original $30,000. I would apply the principle in moderation.

On this basis of estimated original cost, in 1921, the year the Commission used as the last normal year for which figures were available, the railroad coal companies on the average made an unreasonable profit. Unreasonable for a competitive business, still more unreasonable for a monopoly. This was the average. Certain low-cost companies made, and have long been making, profits that can only be classed as exorbitant.

Let me set out the specific facts supporting this conclusion. The book value as of 1921 and the identified

revaluations of each railroad coal company as shown by the Commission are here set down with the resultant estimate of original cost, which I reach by simple subtraction of the revaluations. Then is given the net income found by the Commission for each company, the rate it calculated on the book value, and the rate I have calculated on the figure of original cost. The Coal Commission in its summary report did not combine any of the companies in an average, saying that because of the wide variation between companies averages are misleading. It did, however, combine nine of the ten companies in an appendix. Because of certain difficulties it did not set out comparable figures for the Glen Alden Coal Company, among the lowest in cost and highest in profit of all the railroad coal companies. I am showing the averages excluding the Glen Alden Coal Company, and will later show averages excluding high-cost companies. The table shown below gives the figures.

Space fails to analyze here the reasonableness of the profits of the average independent producer. The independents have long lived as they could. They will no doubt continue to do so. Natural public sympathy for them has been somewhat strained by the instances of excessively high prices charged by them during coal crises at times when the railroad coal companies refused to take the prices that could have been commanded.

Confining ourselves, therefore, to the railroad coal companies shown in the table, we see that in 1921 they averaged eleven per cent on the book value and as much as eighteen per cent on estimated original cost.

This high average profit is in spite of the fact that the Reading and the Lehigh Coal & Navigation companies, with over a third of the aggregate book value of all the companies and with about three fifths of the aggregate original cost, were making less than five per cent on either basis.

The average of the five interests excluding these two low-profit companies was eighteen per cent on book value and forty-one on original cost.

ANTHRACITE OPERATORS

*(The railroad coal companies excluding the D. L. & W.—Glen Alden)**

Year 1921

	COAL INVESTMENT BOOK VALUE	IDENTIFIED REVALUATIONS	ESTIMATED ORIGINAL COST	NET COAL INCOME†	RATE	
					Book	Original
					%	%
Lehigh Valley & Coxe Bros.	$46,301,000	$42,050,000	$4,251,000	$5,831,000	12.6	137.2
Pennsylvania & Hillside (Erie)	13,026,000	.....	13,026,000	5,950,000	45.7	45.7
Glen Alden and D. L. & W.	64,481,000*	55,572,000†	8,909,000†	4,000,000‡	6.2	44.9
Lehigh & Wilkes-Barre (C. of N. J.)	28,974,000	6,169,000	22,805,000	8,707,000	30.0	38.2
Hudson Coal Company Interests (D. & H.)	51,298,000	33,038,000	18,260,000	4,496,000	8.8	24.6
Scranton Coal Company (N. Y. O. & W.)	4,126,000	.....	4,126,000	465,000	11.3	11.3
Philadelphia & Reading	97,198,000	7,012,000	90,186,000	4,119,000	4.2	4.6
Lehigh Coal & Navigation (L. & N. E.)	31,966,000	16,214,000	15,752,000	678,000	2.1	4.3
Total excluding Glen Alden	$272,889,000	$104,483,000	$168,406,000	$30,246,000	11.1	18.0
Total including Glen Alden	$337,370,000	$160,055,000	$177,315,000	$34,246,000	10.2	19.3

* The Glen Alden was organized to take over on September 1, 1921, the coal business of the D. L. & W. R. R. The combined tonnage of these two companies for the year 1921 was between nine and ten million tons.
† As per Coal Commission.

The Reading and the Lehigh Coal & Navigation Company's low rates of return are in large part due to the fact that their reserves of unmined coal—much more vast than those of the other companies—disproportionately increase their investment and at the same time, on account of the carrying charges, reduce their profit.

An important fact not taken into account in this record of the profit of the larger coal mining companies is the profit of the anthracite railroads, with which these mining companies are connected through common stockholdings or otherwise. Space forbids going into the matter of the associated railroad profits in detail, but it should be borne in mind in considering whether the mining profits could reasonably be reduced.

What is a reasonable profit for the railroad coal companies under the conditions of limited supply and substantially monopolistic control? Is it six per cent—or eight per cent—or some other percentage? I incline to think six per cent is reasonable in view of all the circumstances. Others no doubt will think a higher percentage is necessary.

There would be a much better basis for judging if we had an impartial actuarial record of property loss in mine disasters reduced to the actuarial expectation of loss per ton of production per year. Proper allowance could then be made for the present quite indefinite "mine hazard." It could either be put in as a definite element of cost and set aside in a reserve for such contingencies, or it could be used to judge the added percentage of profit necessary to cover the risk. This mine hazard is the property hazard, not the hazard of compensation to injured employes, which is already reduced to an actuarial basis and taken care of in cost under the head of Workmen's Compensation or Liability Insurance.

Whatever one's view of the percentage of profit that is reasonable, the foregoing table gives the basic figures from which can be calculated the excess profit over any assumed percentage. In the following summaries the excess profits over six per cent are shown on the basis both of book value and estimated original cost. The total fresh mined and culm bank tonnage of each company is also shown, and the excess profits per ton are thereby calculated.

I have said that many of the companies could have materially reduced prices even on the book valuation basis. This table shows that if they had been content with six per cent on book valuation as reasonable all but two of the companies could have reduced prices by amounts ranging from fifteen cents on up to $1.35 a ton on their entire output. The Reading and the Lehigh Coal & Navigation Company could not have reduced prices on this basis, for each of them fell short of making six per cent. With the prices of these two companies remaining unchanged, the reductions that the others could have made would have put down the average price for the tonnage for all companies, including that of the Reading and the Lehigh Coal & Navigation Company, by thirty cents a ton.

On the original cost basis the reductions, of course, could have been larger, ranging from eighteen cents to $1.45 a ton. Even on this basis the Reading and the Lehigh Coal & Navigation Company could not have reduced prices. With their prices unchanged, however, the average reduction on the entire tonnage could have been forty-five cents a ton.

The reason why the Reading and the Lehigh Coal & Navigation Company

RAILROAD COAL COMPANIES

Excess Profits on Various Bases

Year 1921

	TONS (FRESH MINED AND CULM)* 2,240 lbs.	ACTUAL NET COAL INCOME AS PER COAL COMMISSION	ASSUMED INCOME AT 6 PER CENT ON		EXCESS INCOME OVER 6 PER CENT ON		EXCESS PER TON	
			Book Value	Original Cost	Book Value	Original Cost	Book Value	Original Cost
							Cents	Cents
Lehigh Valley & Coxe	7,817,800	$5,831,000	$2,778,060	$255,060	$3,052,940	$5,575,940	39.1	71.3
Pennsylvania & Hillside	6,617,900	5,950,000	781,560	781,560	5,168,440	5,168,440	78.1	78.1
Lehigh & Wilkes-Barre	5,083,000	8,707,000	1,738,440	1,368,300	6,968,560	7,338,700	137.1	144.4
Hudson Coal	9,122,400	4,496,000	3,077,880	1,095,600	1,418,120	3,400,400	15.5	37.3
Scranton Coal	1,212,600	465,000	247,560	247,560	217,440	217,440	17.9	17.9
Philadelphia & Reading	10,578,000	4,119,000	5,831,880	5,411,160	−1,712,880	−1,292,160	−16.2	−12.2
Lehigh Coal & Navigation	4,447,700	678,000	1,917,960	945,120	−1,239,960	− 267,120	−27.9	− 6.0
Total excluding Glen Alden	45,279,400	$30,246,000	$16,373,340	$10,104,360	$13,872,660	$20,141,640	30.6	44.5

* Report "P," table following p. 31.

could not reduce prices is because, as already suggested, their investment is swelled by very large reserved tonnages of coal which will not be mined for decades to come and the cost of carrying these great reserves has reduced their net income. The double effect of swelling of investment and shrinking of profit by reason of these reserves makes their rate of return low on any basis. If their business of speculating in coal lands for future generations were separated in their accounts or were separately incorporated, their returns from their business of coal mining in the present generation would be found much more profitable than is indicated by the figures given in the table on the preceding page.

In the case of the Lehigh Coal & Navigation Company there appears to be some further factor included to depress its showing of profits. Its net income figures only fifteen cents a ton, whereas the Commission's table of margins for 1921[4] shows no railroad coal company with as large a tonnage as the Lehigh Coal & Navigation at any margin below forty to forty-nine cents. This seems to indicate that some debit was included in the financial figures of net income which was not included in the margin figures, which show the difference between the cost of production and sales realization for coal.

What do the facts in the above tables mean in relation to the ten per cent wage increase last September, and to the price increase made by the operators in consequence of it?

The facts in these tables are the facts for all railroad company anthracite. They are the facts for both fresh mined and culm bank coal, both domestic sizes and steam, all combined. They are the facts for 1921, the last normal year. If the strike year, 1922, was a "bad" year, there are many earlier "good" years to offset it. The ten-year average profit of these companies, classified in three groups, was respectively ten, fifteen, and thirty-four per cent on book value of the stockholders' equity, the book value of the latter group being characterized by the Commission as much nearer to original cost than that of the other groups. The first quarter of 1923 was much more profitable than 1921, but the probabilities are that in the spring and summer of 1923 the rate of profit was not so high as in the first quarter. All in all, it is the best that can be done and probably entirely fair to the operators to use 1921 results as a basis for judging their condition just prior to the time of the ten per cent wage increase.

The situation was apparently this: Average labor costs were $3.97 per ton; the ten per cent increase added, therefore, 39.7 cents, approximately 40 cents, to the total cost of production. It was contended that none of the increased cost could be recouped from increased prices of steam sizes, which are in competition with bituminous coal. This contention meant that if the wage increase was to be passed on to the public, it would all have to fall on domestic sizes, and would increase their price fifty-eight cents, approximately sixty cents. Of this amount Governor Pinchot maintained that on the basis of then available information the operators could absorb ten cents. The Coal Commission's investment and profit report had not at that time been made public.

From the investment and profit facts now made public, I have shown above that in 1921, and presumably equally well just prior to the wage increase, the railroad coal companies could have reduced their prices thirty cents a ton on the average and still earned six per cent on book value; or

[4] Report "P," third table following p. 19.

forty-three cents a ton and still earned six per cent on estimated original cost. This is on all sizes, including steam.

The domestic sizes, however, usually bear the brunt of any price increase, since the steam sizes are always regarded as bringing as much as it is possible for them to bring under the conditions of price competition from bituminous coal at any given time. It is therefore proper, when a reduction in anthracite prices is possible, that the domestic sizes should receive the benefit.

Domestic sizes of fresh-mined anthracite, excluding pea, as given in the Coal Commission's report on Cost of Production of Anthracite, released August 23, 1923 (tables following p. 29), are found to average 69.8 per cent of the total fresh-mined production of the railroad coal companies for the two periods shown, which are the last quarter of 1920 and the first quarter of 1923. But the tonnage of 45,279,400 tons I have been using in the price reduction calculations is the total of both fresh-mined and culm. The culm would furnish mainly pea and steam sizes, and relatively little of the larger coals. Therefore I arbitrarily lower the 69.8 per cent found for fresh-mined to 66.6 per cent, and regard two thirds of the total tonnage as of domestic sizes. Thus the domestic sizes, excluding pea, figure 30,186,000 tons.

The forty-five-cent price reduction shown in my table for the entire 45,279,400 tons of all sizes amounts to a sixty-seven-cent reduction on the domestic sizes. This result is secured by applying the entire $20,141,000 shown in the table as the excess profit over six per cent on original cost, to the 30,186,000 tons of the domestic coal. It is the measure of the reduction that could reasonably have been made on domestic sizes in 1921, and presumably equally well any time in 1923 up to the date of the strike award.

Now comes the interesting part of the calculation. If the railroad coal companies could have reduced prices of domestic sizes sixty-seven cents a ton last August, it means that they could have absorbed the entire sixty-cent cost on the wage award and in addition cut their prices an average of seven cents. Instead they raised prices of domestic sizes by seventy-five to ninety cents. The weighted average of the increases of the particular companies concerned was approximately eighty cents a gross ton.[5]

It follows that these companies could now cut domestic sizes eighty-seven cents a ton and still make six per cent on their estimated original cost of investment, which, with the twelve-cent reduction previously shown possible for retailers and wholesalers, would make a cut of ninety-nine cents, roundly one dollar a gross ton in consumers' prices.

By a similar calculation, at eight per cent on original cost, mine prices on the average could be reduced by seventy-six cents and consumers' prices by eighty-eight cents a gross ton. At six per cent on book value, the mine reduction could be sixty-six cents and the reduction to consumers seventy-eight cents. Even at eight per cent on book value, the mine price could come down forty-eight cents and the price paid by consumers could come down sixty cents a gross ton.

Such reductions would be important

[5] Prices, by companies, from *Coal Mining Review*, issues of April 15 (p. 12), and November 15 (p. 11), 1923; and 1921 tonnages, by companies, from the Coal Commission's Report "P," table following p. 31.

and would save the average family many dollars on the coal bill. Yet the figures are conservative from every angle, as has been shown, and the true amount of reduction that could reasonably be made if all the facts were known does not appear.

DIFFERENTIAL COST ADVANTAGES

Comparing the railroad coal companies as a group with the independents, whose cost as a group are higher, the Coal Commission's report of July 9, 1923 says:

> The Commission is convinced that the public would benefit by increased production by the larger and lower-cost companies.

Speaking of these companies the Commission says:

> The present differentials in price made by the several "railroad" companies constitute some recognition of the right of the public to share in the advantage of the low-cost concern, but these differences in mine prices are far from reflecting the actual differences in mine costs. While because of great variation in natural conditions certain large companies have costs even $2 below the costs of other companies less fortunately situated, yet little of this advantage accrues to the public.

If the companies shown in the table on page 136 reduced their prices by the varying amounts indicated, they would be passing on these differential advantages to the public, assuming that wholesalers and retailers would act fairly and not absorb the difference on the way to the consumer.

It may be argued that this would mean a multiplicity of prices to the consumer for coal of the same kind and quality, but we have to struggle with a wide variation in prices now as between the "company coal" and the independent coal. Apparently, on the whole, despite many aggravating cases to the contrary, the bulk of the present differential between company and independent mine prices accrues to the consumer. On most of the coal most wholesalers and retailers appear to give the public the benefit of the differential. With full publicity the same result might be hoped for if there were also wide differentials between the railroad coal company prices. The only other course is a "pooling" of all the coal and a selling at a single price, distributing to each producer a fair return on his investment, or a taking of the differential by taxation.

Why is it that for a generation past there has been no apparent tendency on the part of the railroad coal companies to pass on to the public any appreciable amount of these differential advantages in cost? Why have the "company circular" prices been so nearly identical?

The answer is clear. Because they have had a substantial monopoly of the supply in the ground, and of its mining and transportation. Let me quote again from the Coal Commission's report of July 9, 1923:

> The fundamental fact in the anthracite coal problem is that heretofore these limited and exhaustible natural deposits have been in the absolute private possession of their legal owners, to be developed or withheld at will, to be leased for such royalties as could be exacted, to be transported and distributed at such rates and in such manner as a double-headed railroad and coal combination might find most advantageous from the point of view of private profit, to be sold at such prices as could be maintained by the restriction of output and the elimination of independent competitors, through such means as the maintenance of

freight rates, burdensome except to those who, owning both mines and railroads, could afford to be indifferent as to whether their revenue came from the one source or the other.

In all this it must be remembered that there is at present no law to require the operators to restrict their profits. But there is ground for believing that they should revise their ideas of what is "reasonable." Their claim of reasonable prices cannot stand in the face of the facts the Coal Commission has made public.

Thus far this article has not set out the ground for the use of the original cost principle or of the estimate of original cost derived by deducting known revaluations from the book figures. The ground is in the obvious fact that the value of the anthracite properties has been influenced by the monopolistic control which these companies have over the limited deposits and by the combination in restraint of trade which they have long maintained. This is true of the present market value and of that part of the market value which they have deemed it prudent to write up on their books through revaluations. To recognize this inflated value as a proper basis for judging the reasonableness of return is to confirm to an unlawful combination the fruits of its unlawfulness.

Here are some of the facts that one must face if he accepts the book value as a basis for calculating the rate of profit. They are from the Coal Commission's Report "P" released November 10, 1923. (P. 55.)

> In order to reduce taxable net income as much as possible through depletion and depreciation charges most coal operators increased their fixed assets, on which such charges were based, to a fair market value of March 1, 1913. Sometimes this was done by an appraisal of the fixed assets themselves under the supervision of mining engineers and sometimes by an audit of the books of account over a term of years for the purpose of restoring to the fixed asset accounts the amounts that had been charged to cost or income. Previous to this time, many companies had followed the policy of making each year's operations bear the cost of new plant and equipment and, in some cases, the cost of new coal lands acquired.

The report states that a memorandum account of the Pennsylvania and Hillside companies (Erie interests) shows their property to be valued for income tax purposes at nine times the figure at which it is now entered on their books. Their book investment, which is nearer original cost than that of the other companies, yields forty-five per cent return. If the value on the memorandum account were entered on the book account their rate of return would be but eleven per cent (p. 8).

Of the Lehigh Coal & Navigation Company the Commission says (p. 10):

> The total original cost of its present holdings of 8,940 acres of coal lands was $1,412,000. This original cost has been written up by two revaluations. The first, made in 1871, increased the book value by $4,970,000. The second, made in 1917 for Federal tax purposes, added $10,060,000 to the value.
>
> In the meantime the depletion charged by the company has amounted to $3,685,000, or two and a half times the original cost of the lands. Yet the lands still stand upon its books at $12,757,000, or nine times their original cost.

This is a case of eating your cake and having it too.

Speaking of the transfer of the Delaware, Lackawanna & Western coal properties to the newly organized

Glen Alden Coal Company in 1921 the Commission says (p. 9):

> Assets which at the time of sale showed a value of $6,240,000 on the railroad company's books were entered on the Glen Alden Coal Company's books at $72,240,000, an increase of $66,000,000.
>
> The Commission is aware that the $72,240,000 upon the books of the Glen Alden Company technically represents the original cost to that company, but the stockholders of the coal company were practically identical with those of the railroad company. Little new money was invested at this time and the chief evidence of value was a promise made by the owners in their capacity of stockholders of the coal company to pay $60,000,000 to themselves in their capacity of stockholders of the railroad company. In these circumstances the transaction does not disguise the fact that book values have appreciated without investment of new money.

The Coal Commission made no decision as between these two methods of valuation. It very properly did not pass upon value nor on reasonableness of return, conceiving that, as a fact finding body, it was its duty to set out the facts, not to make a judicial determination from them. It pointed out that under the Supreme Court's decisions various bases, including market value, reproduction cost, original cost, must all be considered in arriving at a judgment.

To illustrate the court ruling and at the same time to show the argument for an opposite view, let me quote from the majority and the dissenting opinions in a recent case.

In State of Missouri v. *Public Service Commission* (the Southwestern Bell Telephone Company case), decided by the U. S. Supreme Court, May 21, 1923, Justice McReynolds delivering the majority opinion, cited with approval the Court's previous rulings in other cases, as follows:

> There must be a fair return upon the reasonable value of the property at the time it is being used for the public. . . . And we concur with the Court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property, which legally enters into the consideration of the question of rates, has increased in value since it was acquired, the company is entitled to the benefit of such increase. . . .
>
> The making of a just return for the use of the property involves the recognition of its fair value, if it be more than its cost. The property is held in private ownership, and it is that property, and not the original cost of it, of which the owner may not be deprived without due process of law.

Again, he said:

> It is impossible to ascertain what will amount to a fair return upon properties devoted to public service, without giving consideration to the cost of labor, supplies, etc., at the time the investigation is made. An honest and intelligent forecast of probable future values, made upon a view of all the relevant circumstances, is essential. If the highly important element of present costs is wholly disregarded, such a forecast becomes impossible. Estimates for tomorrow cannot ignore prices of today.

Justice Brandeis in his notable and statesmanlike dissenting opinion (Justice Holmes concurring) reviewed the history of the Supreme Court's valuation decisions since the ruling case of *Smyth* v. *Ames*, twenty-five years ago. He said:

> The Court, adhering to the so-called rule of *Smyth* v. *Ames*, 169 U. S. 466, 18 Sup. Ct. 418, 42 L. Ed. 819, and further defining it, declares that what is termed value must be ascertained by giving weight, among other things, to estimates of what it would cost to reproduce the property at the time of the rate hearing.

The so-called rule of *Smyth* v. *Ames* is, in my opinion, legally and economically unsound. The thing devoted by the investor to the public use is not specific property, tangible and intangible, but capital embarked in the enterprise. Upon the capital so invested the Federal Constitution guarantees to the utility the opportunity to earn a fair return.

Referring again to *Smyth* v. *Ames*, he said:

The experience of the 25 years since that case was decided has demonstrated that the rule there enunciated is delusive. In the attempt to apply it insuperable obstacles have been encountered. It has failed to afford adequate protection either to capital or the public. It leaves open the door to grave injustice. To give to capital embarked in public utilities the protection guaranteed by the Constitution, and to secure for the public reasonable rates, it is essential that the rate base be definite, stable, and readily ascertainable, and that the percentage to be earned on the rate base be measured by the cost, or charge, of the capital employed in the enterprise. It is consistent with the Federal Constitution for this Court now to lay down a rule which will establish such a rate base and such a measure of the rate of return deemed fair. In my opinion, it should do so. . . .

The rule does not measure the present value either by what the utility cost to produce, or by what it should have cost, or by what it would cost to reproduce, or to replace it. Under that rule the tribunal is directed, in forming its judgment, to take into consideration all those and also other elements, called relevant facts.

Obviously, "value" cannot be a composite of all these elements. Nor can it be arrived at on all these bases. They are very different, and must, when applied in a particular case, lead to widely different results.

That the amount of money actually invested prudently is the true measure of value is emphasized again by Justice Brandeis in this statement:

The conviction is widespread that a sound conclusion as to the actual value of a utility is not to be reached by a meticulous study of conflicting estimates of the cost of reproducing new the congeries of old machinery and equipment, called the plant, and the still more fanciful estimates concerning the value of the intangible elements of an established business. Many commissions, like that of Massachusetts, have declared recently that "capital honestly and prudently invested must, under normal conditions, be taken as the controlling factor in fixing the basis for computing fair and reasonable rates."

This which is now the minority view in our highest tribunal may, in time, under the force of changing public and official opinion, become the law of the land.

Two admissions and an offset in closing:

(1) The estimated original cost I have used is admittedly not the exact original cost. The Coal Commission gave the figures of revaluation but it did not itself make the subtraction. It said those who wished to do so could, but it would not, for stated reasons. Some of these reasons would tend to increase the original cost, some to lower it still further. For example, the revaluation figures, though mostly applicable to coal lands, may have included some revaluation of property not connected with the coal business. On the other hand, there were probably some revaluations, it said, which the accountants of the Commission did not discover at all. In any case, the Commission found the determination of the exact figure could not be made in the time and with the funds available to it. The figure arrived at by subtracting identified revaluations is conceivably lower than actual original cost. The probabilities, however, are that it is generously high.

(2) The amount of price reduction possible as figured in the tables of this article is calculated from the net income before Federal taxes on that income were paid. For eight of the ten railroad coal companies tax figures were ascertained for 1921. They are not available for the Hudson and the Glen Alden Companies. The eight companies, including the exceptional Reading and the Lehigh Coal & Navigation Company, made a profit of 17.1 per cent on original cost and paid taxes of eleven cents a ton.

Federal taxes must, of course, be paid, but if the railroad coal companies reduce their income to six per cent on original cost, the amount of the tax per ton will not be serious. In any event ordinary persons are not heard to say that their wages or salaries must be increased to enable them to pay their income tax, nor should a corporation's prices be increased for that purpose.

As an offset to the argument of Federal taxes and to a possible though highly improbable underestimate of original cost, is this fact: The original cost principle properly applied not only affects investment but (through the charges to annual cost for depletion and depreciation of that investment) it also affects the net income. If coal costing one cent a ton in the ground is charged into cost when mined at nine cents a ton, an actual profit of eight cents a ton is concealed. The total costs appear higher than they really are and the total net income or profit appears lower than it really is.

Now the Coal Commission's report emphasizes that the figures of net income given by it have not been increased to take care of any such overcharges for depletion or depreciation. Hence the aggregate net income of $30,246,000 shown in the report, and used in this article for computing the amount of profits in excess of a six per cent return, is an understatement, and probably a very material understatement, of the true amount of profit on the original cost principle of accounting. No figures are available to show the extent of this understatement.

If the full facts of the true investment, excluding excess reserves, and of the true net income were available, the price reduction possible after allowing a reasonable return would be found far greater than now appears.

After all, the original cost principle simply serves to reveal the truth about the actual amount of profit being earned on the actual amount of money invested. Is not that what we want to know?

In simple human experience profit is reckoned as the profit on cost. Actual investment plus revaluations (profit) gives us a hybrid figure of investment—part cost, part profit—as a basis. Actual cost of production plus excess charges for depletion and depreciation (profit) gives us a hybrid figure of cost, and results in showing a net income that is less than the true net income. Part of the true net income is hidden.

These are simple propositions but they are inescapable. We ought to know the actual amount and the actual rate of profit, however high it is. We should insist on accounting practices that reveal, not conceal, these facts.

Once the facts are before us and the true rate of profit known, we are in a position to exercise our judgment.

One is then at liberty to say,

"Why, yes, that is a high rate, but under all the circumstances I think it reasonable."

Another is at liberty to say,

"No, that rate is too high."

But not until the true rate is known can the country really begin to argue the reasonableness of the profits. That is why in this article I have tried to get as near as possible to the actual rate on the actual money put in. The estimate of original cost is admittedly not exact, but it is far nearer the true amount than is the appreciated book value. Using it then as the best approximation of the truth, the question is open for discussion whether six per cent or twenty per cent or some intermediate rate is the "reasonable" amount for these companies to make for their share of the consumer's dollar.

Costs and Efficiency in the Wholesaling and Retailing of Coal

By John W. Adams

Examiner in Charge, Wholesale and Retail Section, United States Coal Commission

UNDER the subject of "Costs and Efficiency in Wholesaling and Retailing of Coal," it is my purpose to discuss briefly the costs, investments and profits of wholesale distributing agencies other than the selling departments or affiliated sales companies of producers, and the costs, investments and profits of retailers, together with discussion of certain conditions prevailing in the wholesaling and retailing of coal which have a bearing on the efficient discharge of the two functions. The discussion is based entirely on the findings of the Wholesale and Retail Division of the United States Coal Commission.

In the field to be covered there are two major and several minor classes of distribution agencies. Time, however, will permit only the briefest discussion of the two major classes which may be defined as:

1. *Wholesalers.* (Sometimes called jobbers.) Individuals or corporations not directly affiliated with the companies whose coal they handle, who sell to retailers or consumers in carload lots without physically handling the coal on, over or through their own yards, docks or other equipment, and

2. *Retailers.* Individuals or corporations who buy in carload lots, physically handle the coal through their own or leased retail yards and delivery equipment and sell and deliver it in less than carload lots to consumers.

Between these two major classes there are several less important groups of distributing agencies among which may be noted:

(a) *The broker* who buys and sells coal contracts.

(b) *The line trestle yard* which buys in carload lots and sells in less than carload lots to teamster-retailers, and in some cases (as, for instance, in Buffalo) also provides retail delivery for a part of the tonnage handled.

(c) *The dock company* of the Northwest which purchases outright, or handles on commission, coal shipped to the head of the Lakes, physically handling and storing it on its docks, and selling and trans-shipping it by rail in carload lots to retailers at inland points, or selling it in less than carload lots to "teamster-retailers," or even selling and delivering it at retail themselves.

Besides retailers operating their own yards, there are many retail deliverymen or teamsters who purchase by the wagon- or truck-load from wholesale docks and trestles, or from other retailers and provide delivery equipment and service; peddlers who purchase by the wagonload and peddle coal by the bushel from house to house; and the coal cellar and corner grocery which handle coal in bags to the poorest trade.

Two Coals—Two Distribution Problems

As a background for intelligent discussion of the wholesale and retail trade, it is important to note that dif-

ferences as to quantity, location and ownership of deposits, and differences in use as between anthracite and bituminous make the distribution problems of the two quite different.

Pennsylvania furnishes practically all of our anthracite. It is estimated that one third of the available supply has already been mined. Nine tenths of the remainder is owned by a few large producing companies which mine 75 per cent of the annual production and sell it mainly through their own sales organizations at announced prices that are so stabilized that they do not fluctuate with changes in demand. These large so-called "railroad companies" or "big companies" make only the minimum use of the independent wholesaler. The remaining 25 per cent is produced by a relatively large number of so-called "independent" producers whose tonnage is too small to support sales organizations of their own, and who therefore make large use of the independent wholesaler. Independent prices fluctuate widely with the demand, with the resulting phenomenon of "premium prices" under which anthracite sells in the same market, particularly in times of shortage, not at one, but at many prices. Spot prices quoted for domestic sizes of anthracite in New York on October 29 ranged from $8.75 to $9.25 per gross ton for "company" coal, and from $9.85 to $12.25 per gross ton for "independent" coal f. o. b. mines. This wide spread in prices at mines offers abundant opportunity for speculative handling by wholesalers and places great restriction upon retail competition.

Pea and larger sizes are distributed over a very wide area for household use while the steam sizes unavoidably produced with the larger sizes must be sold, generally at less than production cost, in price competition with bituminous in a relatively small area near the mines. In times of shortage the sale of steam sizes at prices higher than the regular steam market is forced by making the acceptance of a retailer's order for domestic sizes contingent upon his purchasing a quantity of steam sizes. This practice is closely akin to full line forcing. Retailers frequently are obliged to take losses on steam sizes so purchased. Such losses must be recouped in the form of higher prices on domestic sizes.

By way of contrast, let it be noted that rich deposits of bituminous coal are found in some 28 states and in Alaska. The exploitation of this vast supply has only begun. Producing capacity far in excess of the normal demand is already developed, and many producing regions compete for the tonnage in any given market. The bulk of bituminous coal is consumed for industrial purpose, only a small percentage going to the household trade. Its distribution agencies are the selling organizations of producers selling direct to industrials and to retail coal merchants, or to wholesalers who in turn sell to industrial consumers and to retailers.

I. THE WHOLESALE TRADE

The independent wholesaler is a direct outgrowth of conditions existing in the production and distribution of coal. The services rendered may be briefly summarized as follows:

1. Offering a ready sales organization to small mines whose tonnage is inadequate to warrant them in maintaining their own selling organizations.

2. Offering a similar service to large operators in markets not fully covered by the operator's sales organization.

3. Advancing for small operators, particularly those producing bituminous coal, a certain amount per ton immediately upon notice of shipment,

thus financing mine payrolls for further operation.

4. Offering a wider selection of fuels to the purchaser and, in some cases, fuel engineering advice respecting the different kinds of coal handled.

5. Extending credit to purchasers.

The wholesaler's remuneration is taken in the form of a commission or gross profit, commonly spoken of in the trade as the wholesaler's "margin." This margin includes all expenses as well as the wholesaler's profit.

The Coal Commission's study of margins, costs, profits and investments of wholesalers covered the ten-year period from 1913 to 1922 inclusive. This was a period of steadily rising prices for all kinds of coal. Along with the increase in prices went an increase in the amount of investment required to finance the wholesaling of a ton of coal. Margins and expenses per ton increased sharply and net profits per ton fluctuated widely.

To one not familiar with the wholesale trade, the smallness of the margins, expenses, and profits per ton, and the large returns on investment yielded by net profits of but a few cents per ton will be surprising until it is recalled that the wholesaler's function is confined to selling coal without actually handling it, and that therefore his actual investment per ton of coal sold is small.

MARGINS, EXPENSES, PROFITS AND INVESTMENTS

The year 1913 was the year of lowest margins and lowest expenses, but not the year of lowest profits. In that year 90 companies, handling over 42 millions of tons of all kinds of coal in all parts of the country, showed an average margin of 9.4 cents per ton; an average expense of 6.1 cents; an average net operating profit of 3.3 cents and a total net profit of 3.6 cents per ton. The difference between the net operating profit and the total net profit represents interest received on money loaned to mining companies, interest on receivables and other income arising out of the operation of the wholesale coal business. This small profit per ton yielded a return of 19.0 per cent on total investment consisting of the net proprietor's equity, or net worth of the business, plus borrowed money. After deducting interest paid on borrowed money from earnings, and deducting borrowed money from total investment, the rate of return on the net proprietor's equity was 24.1 per cent. Yet a prominent New York wholesaler, following the release of the Commission's report, was quoted in a press statement to the effect that a profit of 3.6 cents per ton in 1913 meant practically doing business at a loss. Doubtless a large number of people reading the statement, not knowing that the average amount of capital employed to handle a ton of coal and earn the 3.6 cents in 1913 was but 19.2 cents, agreed with the wholesaler.

At the other end of the ten-year period 424 companies, handling 114 millions of tons in the strike year, 1922, reported average margins of 22.4 cents per ton; expenses of 15.8 cents; direct operating profit of 6.6 cents, and total net profit of 7.3 cents per ton. This profit per ton yielded 21.8 per cent on a total investment of 33.4 cents per ton and 25.6 per cent on a proprietor's equity of 26.3 cents per ton.

The year of lowest earnings for the trade as a whole was 1921, when 391 companies handling 87 millions of tons (representing a sharp decrease in tonnage due to the industrial depression of that year), with an average margin of 19.0 cents and average expenses of 18.4 cents per ton, realized an average total profit of but 1.6 cents, which represented a return of but 3.6 per cent on a total investment of 44.6

cents per ton, and after payment of interest only 3.1 per cent on a proprietor's equity of 34.0 cents per ton. These investments, due to decreased tonnage, were over 30 per cent greater than those of any other year.

In contrast with the poor showing of 1921 and the better showings of 1913 and 1922, the year 1917, with an average margin of 20.3 cents, expenses of 9.8 cents, direct operating profit of 10.5 cents and total profit of 10.9 cents per ton, showed rates of 45.4 per cent on total investment and 54.8 per cent on owner's investment. The banner year, 1920, with an average margin of 30.7 cents per ton and expenses of 16.3 cents per ton, yielded a direct operating profit of 14.4 cents and a total profit of 15.0 cents per ton, representing rates of profit of 55.2 per cent on total investment and 66.6 per cent on proprietor's equity.

There were variations in the amounts of margins, expenses, profits and investments in different sections of the country. Wholesalers in the Rocky Mountain and Pacific Coast States region took the highest margins, and realized the highest profits per ton as well as the largest rates of return on investment. In 1918 this group, with a total operating profit of 22.0 cents per ton, realized 92.9 per cent on their total investment and, after payment of interest on borrowed money, 105.5 per cent on the proprietor's equity. These were the highest rates of return on investment shown by any group during the ten-year period. This group realized over 40 per cent in profit on total investment in five of the ten years, and its lowest rate was 10.7 per cent in the year 1922.

OVERDEVELOPMENT

Representatives of the wholesale trade claim that there are too many wholesalers, resulting in reduced tonnages handled per company with consequently increased costs. The reason for the great increase in the number of wholesalers is not far to seek. It lies in the possibility in frequently recurring sellers' markets of the independent wholesaler, by mere ownership without physically handling the coal, extracting large speculative margins from the pocketbooks of needy industrial consumers or retailers. The inquiries of the Coal Commission disclosed instances during the panic market of 1922–23 in which margins up to $3.90 per net ton on bituminous and $5.20 per gross ton on anthracite were taken. So long as such attractive plums in the form of speculative margins, and such attractive profits on investment as have been discussed above continue to exist, new capital will constantly be attracted to the trade. Undoubtedly, greater efficiency could be attained if there were fewer speculators in the trade and the legitimate functions of the wholesaler were discharged by a smaller number of concerns handling larger volumes of tonnage at less costs per ton.

The way to greater efficiency through reduction in number of wholesalers, however, does not lie in the direction of a margin of 8 per cent of the selling price advocated by representatives of the American Wholesale Coal Association. The Commission's studies indicated

> that with margins of 8 per cent, the figure advocated by the American Wholesale Coal Association, the entire wholesale trade, and particularly the wholesalers handling anthracite, would make exorbitant profits. Such a margin would neither be necessary nor desirable. Its presence in the trade would not only be a public injustice, but would further stimulate the already greatly overdeveloped wholesale trade.

What is needed to eliminate the speculative wholesaler and reduce overdevelopment in the trade is an

equation of supply and demand which will eliminate premium coal from the market. When such a condition prevails, real competition among wholesalers for the operator's production and the retailer's and consumer's trade will operate to eliminate unnecessary wholesalers, thereby reducing the overdevelopment of the trade.

WHOLESALERS HANDLING ANTHRACITE ONLY

The Commission found that very few wholesalers handle anthracite exclusively, but that among these the overdevelopment in number of firms is even greater than among bituminous and mixed bituminous and anthracite wholesalers. Only two wholesalers reported handling anthracite exclusively in all of the ten years from 1913 to 1922 inclusive, while 12 reported anthracite only for 1921 and 1922. In 1913, the two wholesalers handled a total of 1,336,000 tons while in 1921, when there was no shortage of anthracite, the same two wholesalers together with 10 others, making 12 in all, handled only 1,717,000, an increase of but 381,000 tons. In 1922, the same 12 wholesalers handled but 1,397,000 tons, an increase of but 61,000 tons over that handled by the two wholesalers in 1913. Thus two companies in 1913 handled an average of 568,000 tons per company, while 12 companies handled averages of only 143,000 tons in 1921 and 116,000 tons in 1922.

Notwithstanding the decrease in tonnage per company among these wholesalers, rates of earnings on investment kept up well. No losses for the companies as a group were shown in any year. Rates of earnings for different years on total investment ranged from 12½ to 37½ per cent, and on net proprietor's equity, from 13.6 to 42 per cent. These rates of earnings were obtained by increasing the average margins realized by all companies reporting from 13.8 cents per ton in 1913 to 34.1 cents in 1920 and 29.4 cents in 1922.

PYRAMIDING OF SALES AND MARGINS

The average margins discussed above represent the average performance on all sizes of anthracite. They do not reflect fully the speculative margins taken by independent wholesalers in seller's markets, nor do they indicate in any sense the full amount that may be added to the price of coal when it passes through the hands of several wholesalers, each taking a margin that is ultimately added to the price paid by the consumer. Such pyramiding of margins affects anthracite especially.

In tracing 802 cars of high-priced anthracite of domestic sizes sold during the fall and winter, 1922–23, the Commission found that 500 cars, or five eighths of the total number passed through the hands of but one wholesaler at margins ranging from 20 cents to $3.00 per gross ton; 251 cars, or 31 per cent went through the hands of two wholesalers whose combined margins ranged from nothing per ton up to $4.75 per gross ton; 47 cars, or nearly 6 per cent passed through the hands of three wholesalers whose combined margins ranged from 90 cents to $4.03 per gross ton, and 4 cars, representing half of one per cent passed through the hands of four wholesalers whose combined margins ranged from $1 to $1.51 per gross ton.

On the 802 cars representing 34,374 gross tons the average margin taken by the wholesale trade was $1.24 per ton. Regarding this average margin the Coal Commission stated that individual wholesalers who did nothing but buy and sell car numbers and weights often took margins larger than those taken by retailers who physically handled the coal, while the average

margin on the 34,374 tons was larger than that allowed by anthracite-producing companies to dock companies which physically handle the coal and absorb the loss and shrinkage in handling. Recent inquiries of the Federal Trade Commission indicate the continuance of high margins realized by wholesalers on sales of coal at premium prices.

SPECIAL DEVICES FOR PROFIT TAKING

The Coal Commission found further that in a number of instances chains of separately incorporated wholesalers exist that are closely allied in economic interest with each other and with certain of the smaller anthracite producers. In times of shortage, coal is passed from one to the other of such wholesalers, each taking a margin or profit on the transaction. The Commission also found that various devices such as the mixing in barges of low-priced company and high-priced independent coal at tidewater, and sale of the mixture at high prices; the misuse of reconsignment on the part of wholesalers; the splitting of wholesale margins with operators, and the like are resorted to by certain unscrupulous wholesalers and operators to exact the largest profit possible in the wholesale distribution of coal.

CONCLUSIONS RESPECTING WHOLESALING

The Coal Commission recognized that the wholesaler is a necessary factor in distribution, but also that because of conditions of overdevelopment, speculation and duplication of function, the activities of speculative independent wholesalers in times of shortage unduly enhance prices to the consumer, especially on anthracite, and to a less degree on bituminous coal. Considering the situation from a public service viewpoint, the Commission recommended that a Federal agency be given strict regulatory powers over the production and interstate distribution of coal. Respecting the wholesale trade the Commission suggested that the regulatory body have the power, particularly in times of emergency, to limit the amount of margins that may be taken by one or more wholesalers to a definite maximum amount per ton, the amount to be the same whether taken by one or more than one wholesaler. Such regulation, with proper provision for court review of the acts of the regulatory body in cases of aggrievement, were regarded as necessary "in order that American industries and households shall at all times be ensured a continuous and adequate supply of coal at reasonable prices."

II. THE RETAIL TRADE

The retailing of coal in the United States is carried on by over 40,000 individuals, partnerships and corporations handling tonnages ranging from the few carloads of the small country dealer to the seven digit figures of a few of the largest concerns. Many dealers make retailing of coal their only line of merchandising. To others it is one of two or more seasonal businesses such as ice, lumber, building materials, grain and livestock shipping that are conducted together. To many it is only a minor side line.

The typical retailer is an independent merchant, owning or leasing his yard and other facilities. He buys his coal outright and assumes all merchandising risks of the business, including shortages in transit, degradation, or breaking of coal in handling, and in addition provides sufficient storage facilities, stocks and delivery equipment to furnish so far as he can the kind of coal his customers want, when, where, and in such quantity as their needs demand. The retailer under-

takes to do this on a gross merchandising profit or, as it is termed in the trade, "gross margin" or "working margin" representing the difference between the cost of coal alongside his yard (including the price paid f. o. b. mines plus freight) and the price at which the coal is sold.

MARGINS, EXPENSES, PROFITS AND INVESTMENTS

The margins taken vary widely on different kinds of coal and with different types of trade served. They also vary considerably in different sections of the country. They generally are largest in the city where expensive delivery service is provided to the consumer's premises or even to his bin, and least in the country where the farmer provides his own delivery service. When the customer provides his own delivery, a difference in price generally ranging from 50 cents to $1 and, in a few cases, up to $1.50 per ton is usually, though not always, made. In many markets the amount of the difference in price allowed appears to be determined by custom rather than by the cost of delivery service.

Recognizing the utter impossibility of compiling cost, investment and profit data for all of the retailers of the country, the Commission planned to cover the trade by a sampling process. Schedules were sent to representative retailers throughout the country, including both those doing an exclusive coal business and those combining coal with other lines. Lack of time and personnel, however, prevented completion of the tabulations of costs and profits of firms engaged in mixed coal and other businesses. Consequently, the Commission's published statements regarding the costs, profits and investments of the retail trade are based entirely on the reports of 273 retailers engaged exclusively in the handling of coal who returned complete investment and profit and loss data for the full five years, 1918 to 1922, inclusive. These companies, representing less than 1 per cent of the total number of retailers in the country, but handling about 10 per cent of the country's retail tonnage, were regarded by the Commission as a representative sample of what may be termed the backbone of the retail trade.

For the 273 companies the average margins ranged from $1.89 to $2.51 per ton in different years. New England dealers showed the highest average margins, ranging from $2.27 per ton in 1918 to $2.95 per ton in 1922. The Middle Atlantic states came next with margins ranging from $1.81 to $2.54; the Central states were third with margins ranging from $1.68 to $2.40, and the Mountain and Pacific and Southern states showed relatively low margins averaging in different years from $1.35 to $2.29 per ton.

Margins of individual dealers on the same kind of coal in the same market frequently varied widely without corresponding differences in selling prices. For anthracite this is accounted for by the fact that some dealers purchased most, or even all, of their supply from low-priced big company sources, while others purchased from high-priced independent sources. In the case of bituminous coal the differences were accounted for by fluctuations in market prices between the dates on which different dealers purchased their coal.

The average expenses incurred by the 273 retailers increased steadily from $1.50 per ton in 1918 to $2.06 per ton in 1921. In 1922 they decreased slightly to $2.02 per ton.

The net profit averaged from 37 cents to 59 cents per ton, 1919 being the year of lowest, and 1920 the year of highest profit per ton. Profits varied widely for different territorial groups in different years. One group in 1921

showed a loss of one cent per ton on all coal handled. This was the only loss shown by an entire group for a year's business.

The total investment required to handle a ton of coal increased steadily for the 273 companies from $2.33 in 1918 to $3.54 in 1922. Two factors were effective in the increase, the first being the general increase in price level, including both the money value of coal handled and the cost of new equipment, and the second being that the tonnage handled by the 273 companies in the later years of the period was some 10 to 15 per cent less than that handled in 1918. Investments per ton also varied in amount by from $1 to $2 per ton in different sections of the country in each year. They were least in the Rocky Mountain and Pacific states and highest in the New England and Middle Atlantic states.

Net profits ranging, as previously stated, from 37 to 59 cents per ton netted returns on total investments ranging from 11.6 per cent to 22.9 per cent in different years. After payment of interest on borrowed money, but before payment of Federal taxes, the rates of return on the owner's investment ranged from 12.1 to 25.4 per cent. In summarizing its study of the retail trade, the Commission stated:

> The results of the Commission's inquiries regarding the retail trade indicate that it is generally conducted on a competitive basis. Prices and margins have increased sharply in all sections of the country since 1918. Expenses, also, especially in the last two years, have increased so that net profits per ton and on investment have shown a tendency to decrease. During the five-year period, 1918 to 1922, the average rates of profit (on investment) of retail dealers throughout the country have generally been moderate and much less than those of wholesalers. In some sections of the country they have been small, while in others they have been fairly large.

OVERDEVELOPMENT OF FACILITIES

The Commission's inquiries indicated that retail facilities generally are considerably overdeveloped. In Washington, D. C., for instance, dealers claim that they could handle about twice as much tonnage as they now handle without materially, if at all, increasing their facilities, and with the added tonnage reduce their per ton costs of doing business. A similar condition appears to be characteristic of practically every city.

PROBLEM OF INCREASING TONNAGE

For bituminous coal, the supply of which is plentiful, the problem of increasing tonnage is purely that of competitive efficiency in the buying and selling of coal. The dealer who can sell for less than his competitors and still make a profit gets the tonnage.

For anthracite, however, the problem is not so simple. The fact that approximately 75 per cent of the annual production is sold at stabilized prices, and is rather carefully apportioned to retailers on the basis of shipments made in previous years, while the remaining 25 per cent has in recent years been sold at higher or "premium" prices, not only makes it difficult for a retailer to increase his tonnage but also imposes great restriction upon competitive merchandising in the retail trade. To increase his tonnage the average dealer must go outside his regular sources of supply and purchase independent coal at such high prices that any reduction in operating expenses to be attained by handling a larger tonnage is more than lost in premiums paid for coal. In summarizing the effect of limitation of supply and the evils of premium coal on the trade the Coal Commission stated:

> The effect of premium anthracite coal on the retail trade is to make direct business

connection with one or more of the big companies which do not sell their product at premium prices of prime importance to a successful retailer. In fact, such direct connection has during recent years been more important than real efficiency in retailing in determining what retailers in the anthracite territory will be able to stay in the business. So long as such conditions continue, competition based on real efficiency in retailing can have but little effect in eliminating the inefficient dealer from the trade.

RELATION OF RETAIL TO WHOLESALE PRICES

The larger profits made by retailers having big-company anthracite connections, as compared with those purchasing a large part of their supply from independent sources, led the Coal Commission to make a study of published price data to ascertain to what extent high-priced premium anthracite is the determining factor in retail prices —in other words, to determine whether the old theory of marginal cost holds good as affecting retail prices. As the basis for this study the wholesale prices of independent and company anthracite of stove size and the retail prices of the same size in New York and Philadelphia, as published in the trade press, and the same data for 51 cities as published by the Bureau of Labor Statistics for the period, January, 1920, to June, 1923, were used.

The study showed that when both wholesale and retail prices were at their peak in the latter part of 1920, the retail price advances over the prices prevailing in January, 1920, for New York, Philadelphia and the 51 cities, were more than twice the advances that had taken place in company prices, but only about one half those that had occurred in independent coal prices. In 1922, however, the advances in retail prices were greater than the advances in independent coal in New York and Philadelphia, and about two thirds as great as the advance for independent coal in the 51 cities. During intervening periods, when independent coal was selling at smaller premiums over company coal, retail prices fell somewhat, but showed larger increases over January, 1920, than either company or independent coal at wholesale. In summarizing its study the Coal Commission stated:

> The degree to which retail prices reflect the full premium paid on independent coal in times of high prices depends upon the amount of competition existing between dealers having big-company connections and those who are dependent upon independent sources for their supply. Indications are that during the recent shortage, with its less radical increase in independent coal prices at the mine, retail prices moved approximately in accordance with the economic theory stated at the outset.

Following the settlement of the recent strike, the prices of domestic sizes were advanced on the average somewhat less than $1 per gross ton, the advances on company coal being from 70 to 90 cents per ton, and on independent coal, in a few cases, over $1 per ton. Press statements immediately following the announcement of new prices f. o. b. mines stated that in some markets retail prices, in most cases figured on a net ton basis, were advanced by approximately the same amount that producers advanced their gross ton prices at mines. Just how general this practice may have been it is impossible to state.

Assuming that retail prices prior to the advance were fair and reasonable to cover retailing services rendered, the question of retailers adding the full advance made by producers on a gross ton basis to retail prices figured on a net ton basis raises a mooted question. On its face it seems unfair to the consumer. On the other hand, however, retailers

claim that, in some markets at least, shortages in transit and losses from degradation, or breaking down of sizes, cover the difference between the long ton bought and the short ton sold. The Coal Commission's attempts to obtain definite statistics from retailers covering shortages and degradation losses produced little actual data, most retailers confining their replies to widely varying estimated percentages covering the two. These estimates, based on the dealer's judgment, generally did not appear to warrant an allowance of 240 pounds in weight or its equivalent in purchase cost to cover the shortage and loss. Undoubtedly there are cases in which retail price advances following the resumption of mining in the fall of 1923 were so large as to merit the criticism of the public.

CONCLUSIONS RESPECTING RETAILING

The attitude of the Coal Commission toward the retail trade was one of sympathetic rather than adverse criticism. The Commission recognized that the trade is overdeveloped and that, even making due allowance for the necessity of maintaining sufficient retail facilities to handle the peak demand of winter, the same service could be given in many markets at less cost to the consumer if the business was in the hands of a smaller number of competing concerns, using their facilities more nearly to capacity. It recognized that the trade is generally highly competitive and that, barring noncompetitive advantages arising out of the existence of premium coal, it is the most efficient firm that succeeds.

The Commission took the position that, in the absence of artificial price control maintained by illegal collusive action on the part of retailers, the competitive nature of the retail trade generally makes regulation of margins and prices unnecessary except in times of emergency shortage, and that regulation, when necessary, should be applied locally and should take the form of regulation of margins rather than the fixing of prices.

The Commission recognized that some of the public dissatisfaction with retail prices, and some of the criticisms of the conduct of the retail business are well founded, but that in many cases they are based on lack of knowledge on the part of the public that the causes of conditions arousing complaint are beyond the control of the retailer. Public opinion is quite often aroused unjustly against the retailer by inflammatory newspaper articles, when what appears to be needed is a better understanding of the trade and its problems on the part of those whom it serves.

In conclusion, the Coal Commission's attitude toward the entire industry was that all phases of the production and distribution of coal are heavily charged with public interest and responsibility. Where real competition exists it is recognized as the most efficient regulator of the trade, but where it is absent, or qualified by artificial or monopolistic conditions, the Coal Commission's recommendations were that greater publicity be given to the fact so that public opinion may be informed and a basis laid for intelligent direct regulation wherever such action would result in the elimination of unnecessary duplication of function, and ensure the consuming public a continuous and adequate supply of coal at prices that are fair and reasonable to the public and to the agencies necessary to produce and distribute the coal.

Railway Rates on Bituminous and Anthracite Coal

By Charles Reitell, Ph.D.
University of Pittsburgh

EVEN a casual survey of the anthracite and bituminous coal industries shows the need of treating the rate problems of each separately. There is no similarity in historic development of freight rates nor is there any similarity in the nature of difficulties that arise when changes in rates are contemplated.

The anthracite fields are highly localized. Within a radius of fifty miles in northeastern Pennsylvania is located practically all of the hard coal of the United States. The bituminous fields of the eastern United States alone are spread over nine states.

The small geographical area of the anthracite has contributed much to the growth of the anthracite combination and the tie-in of the coal with the railroads, while the bituminous industry in contrast is so far-reaching into distinct and separate territories and touches so many different railroads that it is difficult to imagine the construction of a monopoly control such as exists in anthracite.

A study of the rate structure, therefore, must reflect at all times a consideration of the development of combination and monopoly control in the anthracite industry and the continuous existence of competition in the bituminous fields.

Again, the wide separation of the producers of bituminous makes the problem of rate differentials of prime importance. A change in related freight rates in the bituminous industry can readily close mines in one district and open mines in other districts. Much time will be given to this problem later. The anthracite industry being closely localized finds differentials to the producers of comparatively small consequence.

Survey of Anthracite Freight Rates

The best approach to an understanding of the anthracite freight rates is to take the rate to tidewater. Whenever a single rate is mentioned the tidewater rate is usually implied. It is the base rate upon which differentials to other markets are based. Such a rate is one from the Wyoming, Pennsylvania fields to Weehawken, N. J. This rate per long ton of prepared sizes has been over ten years, as follows:

1901—1914	$1.60
1915	1.45
1916	1.45
1917	1.45
1918	1.60 and 1.90
1919	1.90
1920	2.66
1921	2.66
1922	2.66
1923	2.39

The increase over the ten-year period from 1914 to 1923 has been about 50 per cent. And in the light of increases in general prices during the same period, including large increases in the price of labor and material the 50 per cent cannot be considered in itself excessive.

It must be noted, however, that the increases and decreases since 1914 are based on the 1914 rate, and as the 1914 rate is an adaptation of the old percentage contracts our survey must carry us back to those earlier rates if

we are to clearly understand the present rate structure.

The 1915 case, known as "Rates for Transportation of Anthracite Coal,"[1] gives much that spreads light on these earlier rates upon which the present is based.

The flat rate of 1914 was an outgrowth of the percentage contracts and had its birth in 1901. The percentage contracts were so drawn that the shipper would agree to pay a certain per cent of the tidewater selling prices as freight charges. In the early eighties the freight charge under these percentage contracts averaged between 35 per cent and 40 per cent of the tidewater selling price. During the eighties it climbed to 50 per cent and 55 per cent. In 1892 the percentage had reached 60 per cent. On November 1, 1900, the freight charge had reached 65 per cent of the selling price at tidewater.

In 1901 the change to a flat-rate basis took place. The prevailing percentage rates at this time became the tariff rates to tidewater under the flat-rate basis.

The method of establishing the flat-rate was through the action of the Temple Iron Company.

In 1901 several of the anthracite carriers took action through the Temple Iron Company to establish a fixed or flat rate for tidewater shipments. This flat rate to constitute a base from which differentials would be established.

The Temple Iron Company was a holding company and had on its Board of Directors representatives of the Reading Railroad, Lehigh Valley, Jersey Central, Delaware, Lackawanna & Western, Erie, and the Susquehanna & Western.

A Committee of the Directors was appointed, and in one meeting they fixed a rate which was deemed by them as "fair, reasonable and satisfactory."

By the action of the Temple Iron Company the percentage contracts gave way to the flat rate. This rate continued from 1901 to 1915, and for the tidewater haul on prepared sizes was $1.60 from the Wyoming district.

Concerning the establishment of the flat rate the Interstate Commerce Commission said:

> While the adoption of a flat-rate basis of rates in 1901 and 1903 arrested the progressive increase in rates, the evidence clearly shows that the percentage rates *of which the flat or tariff rates were an adaptation* were excessive rates. There is here presented a condition wherein carriers, who were also dealers not in their capacity as carriers but as dealers in the commodity, through the agency of the Temple Iron Company established rates on anthracite coal for all shippers to tidewater. The Supreme Court in the Temple Iron Company Case, 226 U. S. 348, held that the Temple Iron Company to whom these carriers in the manner described delegated the power to fix rates, was an agency used by several of the carriers for the unlawful purposes of gaining a monopoly of the sale of anthracite coal in the markets.[2]

The Commission states further:[3]

> The evidence in this case conclusively shows that the rates on this commodity were established at an excessive basis and clearly it was so done for the purpose of eliminating the independent output as a factor of competition in the markets with the railroad interests' output.

Continuing further the Commission stated:

> The carriers for many years were allowed a free hand in the institution of freight rates. It is evident that they used that great power not with the view of establishing reasonable freight rates but with the intent to establish rates on this commodity that were high enough to remove the production of the independent operators from

[1] XXXV, I. C. C., 220–455.

[2] XXXV, I. C. C., 231.

[3] *Ibid.*, 232.

the field of competition with the coal mines by the railroad interests.[4]

Sufficient of the Commission's statements are given to show their attitude toward the early anthracite rate structure. It is for us to understand and to remember that the rates established in 1901 by the Temple Iron Company are the basis of the anthracite rates that now exist.

Much is lacking in the way of information for determining what a fair and reasonable rate on anthracite should be. It is, therefore, of interest that the Interstate Commerce Commission at the request of President Coolidge is reëxamining the rates at the present time. (Docket, 15006.)

The United States Coal Commission on July 5, 1923, writing of anthracite freight rates to the President, said:

> The question whether or not the existing freight rates on anthracite are excessive is one that comes under the jurisdiction of the Interstate Commerce Commission. The three years' painstaking investigation of these rates by that body, on which its decision of July 30, 1915, was based, developed the pertinent fact that all the conditions in the transportation of anthracite—the vast quantities in trains of maximum tonnage and in cars of large capacity, originating with relatively large shippers—tend toward lower operating costs. More than forty years ago President Gowen of the Philadelphia & Reading referred to this traffic as "very profitable," and in later years anthracite has been termed by the carriers their "backbone traffic." Throughout the history of the industry there has been no change in the attitude of the carriers toward this very desirable business, the active competition for which explains most of the history of combination. As so large a part of the anthracite consumer's dollar goes as freight charges, a material reduction in the price of coal might come through a reduction of freight rates. With a keen appreciation of the public demand for the scrutiny of every item in the cost of anthracite, the Coal Commission urges upon the Interstate Commerce Commission, the duly constituted agency of the Federal Government, a reëxamination of the reasonableness of anthracite freight rates. The pending separation of carriers and mining companies in the three larger systems makes opportune the reconsideration of the subject by the Interstate Commerce Commission.

In forming an opinion in 1915 the Interstate Commerce Commission used several lines of investigation which shaped its decision. This work could with great value be brought up to date. The information would go far in providing a scientific basis today for the establishment of reasonable rates.

The following gives a survey of the more important factors covered by the Commission in 1915:

1. *Cost of Service*

It was shown that the margin of profit, by a comparison of the cost of transportation with the average per ton mile revenue, shows the average cost to be 3.3 mills per ton (2,000 pounds) while the average per ton mile revenue ranged from 5.4 mills for the Pennsylvania Railroad Company to 7.3 mills for the Erie; 7.9 mills for the Lackawanna; 8.4 mills for the Lehigh Valley and 9.4 mills for the Central Railroad of New Jersey.

From the all too brief review of costs made by the Commission, it shows that revenue from hauling anthracite is two to three times the cost.

As the Interstate Commerce Commission has well pointed out, however, costs do not determine rates, yet most rates have within them as a constituent the element of cost. Cost is generally an important element in arriving at a judgment with respect to a rate.

2. *Earnings of Anthracite Haulage as Compared with Other Commodities*

The 1915 case gives considerable data which show the average net ton

[4] XXX, I. C. C., 233.

revenue per loaded car mile for anthracite was higher than the returns on other commodities.

For hauls between 140 and 221 miles which are approximately the length of the anthracite haul to tidewater, the net revenue per loaded car mile in commodities other than anthracite were between seven and twenty-one cents. This maximum of twenty-one cents was under the minimum revenue received on prepared sizes of anthracite—and it was about the same as the minimum on steam sizes.

When we take the Buffalo haul of about 300 miles, the revenue in other commodities is little more than half of those coming from anthracite.

The carriers have contended that the back haul of empty cars must be considered in the light of these comparisons of revenues and costs. This element the Commission took into consideration but stated an offsetting factor—the heavy tonnage hauled-trains of anthracite compared with other commodities. It is true with the exception of ore and bituminous coal that anthracite can be loaded in greater tonnage per car than any other commodity.

3. *The Investment and Income of Carriers*

In the 1915 case the carriers submitted statements concerning their investment and the per cent return on the investment produced by the net operating income. The percentage rate of return for the larger roads for the two fiscal years of 1913 and 1914 ranged from 3.51 per cent for the Erie in 1914 to 9.16 per cent for the Reading in 1913.

The Commission considered at length the financial condition of the carriers, but inasmuch as the carriers' statements did not represent the investment in terms of cost the Commission dismissed from further consideration the book costs.

The valuations of railroad properties when completed by the Interstate Commerce Commission ought to establish a working basis for bringing to the attention of the Commission the per cent of earnings actually made.

In summing up the Commission's work in 1915 on anthracite rates, it is evident that three important factors entered into their considerations:

(1) The actual operating costs of transporting anthracite.

(2) The financial condition of the railroads.

(3) The analysis of comparative revenues received from anthracite and from other commodities.

These three factors are just as important in reaching a fair and just decision today. The material should be brought up to date as early as possible so that in the present anthracite controversy any decision as to what is a fair and reasonable rate will have a direct relation to the above factors as they now exist.

A SURVEY OF BITUMINOUS RATES

To state fully and chronologically the growth of the present bituminous rate structure would compel far more space than is permitted. In order to show the rate changes that have taken place during the last thirteen years, however, it is necessary to observe a typical rate such as the rate from the middle district of Ohio to Lake Erie, for cargo shipments to the Northwest. This is a base rate and, like all such rates in the bituminous industry, forms the basis for the establishment of fixed and definite related rates for other fields. This middle Ohio rate and the related rates to it are ones under which considerable tonnage is hauled.

There are three large markets for bituminous coal:

1. The Great Lakes leading to the Northwest.

2. The Atlantic tidewater.

3. The Pittsburgh valleys wherein are located the large steel industries.

The rate structure given here applies to the first of these markets. The base rate per ton for bituminous coal from the middle district of Ohio to Lake Erie cargo 1910–23 shows:

Year	*Rate*
1910	.70
1911	.70
1912	.60
1913	.60
1914	.60
1915	.60
1916	.60
1917	.75
1918	1.12
1919	1.12
1920	1.68
1921	1.68
1922	1.48
1923	1.48

As stated above, a constant differential is maintained for other districts shipping Lake cargo coal. For instance, the Pittsburgh rate is an 18-cent differential. Thus in 1910–11 Pittsburgh had an 88-cent charge for Lake cargo; 78 cents from 1912–15; 93 cents in 1917; $1.30 in 1918–19; $1.86 in 1920–21; and $1.66 in 1922–23.

Comparing the percentage increases in bituminous freight rates as shown by the Lake cargo hauls, with anthracite increases for the same period, indicates that bituminous increases have been much larger.

From 1910 to 1923 anthracite rates have increased approximately 50 per cent, while bituminous rates have increased 110 per cent. Comparing the trend of both anthracite and bituminous rates for ten years, with the curve of wholesale prices of all commodities, shows that the bituminous rate has kept in close touch with general price increases, while anthracite rates have lagged behind. Evidently the Interstate Commerce Commission has given consideration to the nature of the earlier anthracite rates which were discussed above.

It is indeed difficult to determine whether bituminous freight rates *per se* are excessive or inadequate. An answer to a query covering adequacy or inadequacy of freight rates of bituminous coal must invariably take one back to a consideration of a given specific district. Going into the specific district chosen, a study must be made of the markets, the mining and transportation conditions and the advisability of throwing this district into competition with other districts. To illustrate: The rate from middle Ohio to Lake cargo docks represents a ton haul of 120 miles for $1.48 or a haul of 81 miles for a dollar. From the Kanawha district of southern West Virginia, the Lake cargo shipments show a haul of 360 miles for $1.91 or a haul of 189 miles for a dollar.

Obviously these rates so far as the distance factor is considered show a definite freight advantage to the outlying Kanawha district. And, as will be shown later, these long hauls are a cost factor to the transportation companies much higher than the short hauls. Therefore, if traffic is highly localized and confined to short distances, the freight rates can more readily be reduced than when the transportation companies are compelled to go to far-out territories in gathering the commodity.

RATE DIFFERENTIALS IN THE BITUMINOUS INDUSTRY

Most of the difficulty arising from rate structures in bituminous fields is over the matter of what constitutes fair differentials. The differential problem bristles with thorns. In it

are involved a large share of the causes of the malefficiencies that characterize the bituminous industry. In a paper so limited as this, one must confine himself to showing first the nature and extent of some of these differentials and second, some of the outstanding economic factors that are involved because of these differentials.

To observe a rate differential that shows preference to outlying districts, consider the tariff to Toledo from five different competitive fields:

(a) the Pittsburgh district in western Pennsylvania;
(b) the Fairmont district of northern West Virginia;
(c) the Kanawha district of southern West Virginia;
(d) the Harlan-Middlesboro-Jellico district of southern Kentucky, and
(e) the Oakdale district of eastern Tennessee.

The table above shows the preferences given to the far-distant districts.

District	Distance to Toledo	Rate Per Ton	Length of a Ton Haul Per Dollar Freight
(a) Pittsburgh	280 miles	$2.39	117 miles
(b) Fairmont	340 miles	2.39	142 miles
(c) Kanawha	338 miles	2.39	141 miles
(d) Harlan-Jellico	436 miles	2.39	182 miles
(e) Oakdale *	499 miles	2.59	192 miles

* Since the preparation of this paper this rate has been increased from $2.59 to $2.64 (Nov. 10, 1923).

As is readily seen, the same rate applies to four different districts which have a mileage range as high as 156 miles, while the fifth district has a 20-cent differential for an added haul over the Pittsburgh distance of 219 miles.

Differentials that give preference to outlying territories are translated into costs by a definite case before the Interstate Commerce Commission.[5] This illustration under present rate structure covers data on a 50-ton car hauled from the Kanawha district to Toledo for Lake cargo, as contrasted with a 50-ton car hauled from the Pittsburgh district to Ashtabula for Lake cargo.

When the table below is analyzed it is seen that the Kanawha haul is 214 miles further than the Pittsburgh district, takes 12 days longer to make the haul and gives to the transportation company making the Kanawha haul (C. & O. R. R.) but 50 cents per gross train revenue above the Pittsburgh district, although the car has been 12

Fifty-Ton Car	Pittsburgh District to Lake Erie (Ashtabula)	Kanawha District to Lake Erie (Toledo)
Average distance	148 miles	362 miles
Days (round trip)	11 days	23 days
Earnings (total)	$83.00	$95.00
Less per diem ($1 per day)	11.00	23.00
Remainder for gross train reserve	72.00	72.50
Rate	1.66	1.91

[5] I. C. C., Vol. 46, pp. 207–9.

days longer in making the round trip. As no 12-day haul could possibly be profitable at such a rate of gross train revenue, it indicates one of two things: either short hauls are paying for long hauls, or that the freight rates are unduly excessive.

Up to the present time the differentials have favored the newer and outlying fields, namely, southern West Virginia, Kentucky and Tennessee. These differentials were given in the early 1900's and are closely linked with that period in our history when "trust busting" and "back-to-competition" were popular slogans. And it is fairly certain that only by these differentials granted by the Interstate Commerce Commission could the outlying districts have come into being as competitors with the older and nearer-to-market districts. The differentials granted to these newer districts were not unlike a tariff rate used to protect infant industries; in fact, they had exactly the same effect. They made possible competition with the older established districts.[6]

As might be expected, the attitude toward these differentials will be marked by considerable prejudice depending upon the district in which one's coal is located. But there is little doubt that these differentials have been a determining factor in spreading and overdeveloping the bituminous fields and thus have ushered in more and more of competition, which in turn has made for speculation and instability within the industry.

[6] Differentials on eastern shipments show distance preferences to the newer districts, which are located in southern West Virginia, western Virginia and eastern Kentucky. The tidewater rates from the Clearfield, Meyersdale and Cumberland-Piedmont districts show a haulage of 120 miles, 108 miles and 118 miles respectively for a dollar of freight charged. These are the older and nearer-to-market districts. The tidewater rates from the Pocahontas, New River and Clinch Valley districts show haulages of 155, 151 and 159 miles for a dollar of freight charged. These are the newer developments and are the far-from-market districts.

THE ECONOMIC FACTORS OF FREIGHT DIFFERENTIALS

The economic factors involved in this granting of differentials to outlying districts are of importance in seeing the relation that exists between the bituminous fields and the transportation facilities. Several of these factors will be taken up in turn.

1. *Overdevelopment.*—There are too many men, too many mines, and too much equipment in the bituminous fields. Overdevelopment is the great disease of the industry. The recent United States Coal Commission conservatively estimates an overdevelopment of 24 per cent, while one large producer claims at least a 50 per cent overdevelopment.

The bituminous industry is called upon to produce about 10,000,000 tons a week—yet production cost is burdened with men and equipment equal to a production of 16,000,000 to 18,000,000 tons per week. In 1917, 10,634 mines produced 552,000,000 tons of bituminous. Four years later the number of mines had increased to 14,766—*i.e.*, 39 per cent, while production only increased to 569,000,000 tons, or 3 per cent.

Differentials to outlying districts bring in more mines into competition with inlying districts and thus tend to burden the industry with excess mines, excess investments and surplus labor. These mines all produce during a reign of car shortage, high prices and post-strike periods, but many of them quickly lapse into costly, idle capacity when the peak periods pass.

2. *Cross Hauls and Long Hauls.*—The waste of transportation resulting from long hauls to markets which could be supplied by nearer fields, and the cross hauls which result from the

movement of coal from one field to destinations within or beyond other fields, are outstanding factors that come with differential freight rates. It is a part of the unregulated, free-for-all, competition of both the carriers and the producers of a bituminous coal. As the American Railway Association Conference Committee has said in speaking of cross hauls:

> Cross hauling as now exists is the result of competition both between the coal-originating carriers on the one hand and between producers of coal or buyers of coal on the other hand, together with the movement of coal for special purposes. This has resulted in considerable cross hauling in the great industrial states of Ohio, Indiana and Michigan, which consume approximately 100 million tons annually, drawn from the fields of Indiana and Illinois on the west; Kentucky, Tennessee, Virginia and West Virginia on the south; and Ohio and Pennsylvania on the east.[7]

Two definite and elementary principles may be stated regarding the long and the cross hauls. They are easy to comprehend. (a) The nearer the producers are to the markets the shorter and more economical the hauls. (b) The more concentrated and localized the producers the less the number and extent of cross hauls. Present differentials defeat these two principles in that they give preferences to far-from-market fields and they open up and spread the fields over a larger geographical territory.

3. *Car Shortage.*—Many causes contribute to car shortage and congested transportation in the bituminous industry. It can be said, therefore, that freight rates are but one of many elements that make for this undesirable condition.

The opening up of far-distant mines, calling for long hauls, offtimes over single track lines, means a heavier demand placed upon cars. Unfortunately, car shortage acts as a stimulator to a greater shortage. A heavy demand—usually one following a strike—immediately congests transportation. Such congestion limits the supply and increases the price. Price increases bring into production the small outlying marginal mines, the "snow-birds," which have small outputs but which in contrast demand an unusual amount of costly shifting of freight by the transportation companies in order to place "empties" and take out full cars.

It is very doubtful if any adjustment of freight rates could be made that would even the shipping demands of soft coal. But it is logical to expect that a greater amount of coal could be transported at peak points if these peaks were met by the larger near-to-market producers. Any adjustment of rates which would discourage long hauls and especially the long slow hauls during the periods of stress, would to that extent contribute to a greater car supply.

SCIENTIFIC RATE STRUCTURE NEEDED

Sufficient illustrations have been given, it is hoped, to indicate that the bituminous rate structure is far from being on a scientific basis. The matter has been well put by a Special Report of the National Industrial Conference Board.[8]

> The present rate structure of the country is not on a scientific basis. It is the outgrowth of rates which were put into effect years ago to promote the growth of undeveloped sections of the country, to equalize the advantages of various sections in the same markets, or to allow the railroads to compete with water transportation, which

[7] Report of Amer. Rwy. Assn. Conf. Com., June 1, 1923, p. 64.

[8] The Present Railroad Situation, *Special Report No. 23*, 1923, p. 24–25.

in many cases has since ceased to be active. Consequently, mileage is not the controlling factor in a large proportion of the freight rates. Furthermore, low commodity rates have been made in many instances in order to attract the movement of bulky commodities of low value, which would not be shipped except under low rates. With the growth of the country and the development of many hitherto undeveloped districts, the basis of rates has remained unchanged to a large extent. Naturally, any attempt to put into effect a more scientific system of rates than now exists will meet with considerable opposition from the communities and sections which are favored by the present rate structure. Nevertheless, it is most important that a rate structure based as far as possible on mileage, but giving other factors due consideration, should be installed throughout the country, in order that industry in all sections may be put on an equitable basis in this regard, and that no one section will have rates that will give it an unfair advantage over other sections.

Probably no one has stated the matter of rate structure and its relation to efficiency of transportation better than has Interstate Commerce Commissioner Potter in the Ohio-Michigan Coal Case decided June 8, 1923.[9]

Quoting Commissioner Potter:

Additional transportation can be obtained only by increased facilities or the increased use of existing facilities. Increased facilities involve large expenditures and their use involves increased expense for handling and because of congestion, etc. Increased efficiency without increased equipment is the primary need. Increased efficiency in the use of equipment can be accomplished by making the equipment handle more tons per unit of time—day, month, or year. The amount of tonnage handled during a given time depends upon the number of loads and the number of times a car can be loaded, hauled to destination, unloaded, and returned. The number of round trips depends on the length of haul and the rapidity of handling. Shortening of hauls is the means for accomplishing more round trips. This naturally brings attention to the rate structure. The existing rate basis has been built up on the theory that competition was desirable and that expansion of coal production was needed. To accomplish this the rate structure has been shaped to encourage development of fields remote from the market. Rates from long-distance points are as a rule built on a lower rate per ton per mile than from short-distance points. Having regard for the amount of money that carriers must earn in the aggregate to carry on their operations the higher short-haul rate bears a portion of the long-haul cost. To sustain the long haul the consumer from the short-haul mine is required to pay a rate abnormally high and for a portion of the service rendered to the long-haul shipper. In other words, the average rate on all coal is higher than would seem to be required if in the distribution of the aggregate tonnage the short-haul mines had a higher percentage.

The analysis of these differentials should call attention to the difficult question of the fairness to the consumer of present freight rates on bituminous coal. So long as the policy of maintaining competition by the use of prejudicial and preferential freight rates is followed, just so long must we expect uneconomic conditions to exist. If competition of remote fields is what is wanted, then the present rate structure is adequate. But the consumers should understand that they are paying the bills for the maintenance of such a competitive policy.

It indeed would seem a wiser move on the part of the Commission to inaugurate a policy of shifting as rapidly as possible to a scientific rate structure that would encourage soft coal production where it could most cheaply and most economically be mined and transported. If this spells monopoly let rigid regulation be a counterpart to such a policy. This much is certain—a large number of commercial bodies, trade associations and railroads, to say little of consumers, would be in hearty accord with such a development.

[9] Ohio-Michigan Coal Case, I. C. C., No. 1898, p. 694.

GENERAL CONCLUSIONS

The difficult problem of the coal industry is the problem of transportation. So closely linked is the production of coal with its transportation that the recent United States Coal Commission suggests that the two be joined together as coming under the same regulatory influences.

In the anthracite industry the rate structure as it now exists is a concomitant of an industrial combination of producers and carriers. It follows that one cannot grasp the significance of the anthracite rate structure without seeing it as a part of an evolution from competing operators and carriers to a great industrial combination.

In the bituminous industry an outstanding contrast is found. Competition, with all the economic advantages of organized, coördinated and regulated elements missing, is the predominant characteristic. Here again one fails to grasp the significance of rate structures if he does not link them with the continued prevalence of a competitive régime.

In both industries, let it be emphasized, it is necessary in gaining a proper understanding of rates, that careful consideration is given at all times to the development of a combination on one hand (anthracite) and the continuous existence of blind competition on the other (bituminous).

If rate changes are contemplated, scientific procedure should be followed in both industries: in anthracite in order to determine the fairness of present rates in the light of costs, investments and monopoly profits; in the bituminous industry to ascertain whether or not the maintenance of competition through preferential rates to remote districts is economically sound in the light of present transportation difficulties.

Storage of Coal

By O. P. Hood

Chief Mechanical Engineer, United States Bureau of Mines

THE United States Coal Commission has reported that:

> Storage of coal by consumers is the all-important balance wheel between fluctuating consumption and variable production. It is the consumer's insurance against temporary failures of transportation. It is the only protection yet devised for the consumer against protracted general stoppage of coal mining or of railroad deliveries.

This is an excellent outline of the subject, and we cannot do better than to accent and spread the conclusion of this eminent Commission. If all the producing factors performed perfectly, that uniformity of production desired for economy and stability in the mining industry might be attained, but consumption would still fluctuate with the warm and cold seasons and with activity and depression in our commercial life.

Somewhere along the line between producer and consumer there is needed a reservoir to receive an excess and to supply a deficiency. The place for this is stated to be "by the consumer." Careful consideration of possible storage at the mine, in cars in transit, dealers' stocks, community storage, or at the point of consumption, has led to the general conclusion that storage is most effective the nearer it is to the point of consumption. This immediately puts the question up to each of the multitude of small and large users of coal to determine what part he shall play in the matter of storage. Self-interest will determine the answer, but it is desirable that, where a careful balancing of the factors leads to a neutral position, the decision be made in favor of, rather than against, storage, because of the general good resulting from such practice.

Storage of Bituminous Coal

The storage of anthracite in the summer by the domestic consumer has become a habit. It is not so with bituminous coal, and the development of such a habit will be a help.

The report refers to storage as a measure of insurance and protection. It does not look to a direct saving of money to justify the practice, but rather to those indirect benefits, real but less tangible, for which one is willing to pay as insurance. The general experience is that the differential between the low prices for bituminous coal in spring and the average prices in the fall is not enough to pay the charges involved in storage. Storage is, therefore, justified for other reasons which vary greatly. Our greatest storage pile, involving millions of tons, is at the head of the Lakes, and is made necessary by enforced cessation of navigation. In New England relatively large stocks are carried by railroads because of the hazards of winter transportation over roads not under their control. Public utilities carry larger stocks than the industries because interruption would more seriously affect them. In many manufacturing industries coal is only about a 2 per cent item in costs, and freedom from anxiety as to adequate supply may be a sufficient argument for storage. It is a careful consideration of the incidental advantages of storage in each individual case that is urged. The country has shown its ability,

when duly agitated, to put into storage something over 60,000,000 tons of coal. The storage of this amount produces a very respectable load factor on coal production and distribution. As this is about 50 per cent more than normal storage it now remains to fix as a national habit what already has been practiced under stress. This is evidently a problem of education and agitation.

The Commission's report says:

> Regular systematic large scale storage of bituminous coal by consumers during the seasons of low consumption is the public's largest opportunity and responsibility in solving the coal problem.

We have here a perfectly definite statement of something the individual can do for himself to help in the coal problem, and this is simply to continue to do something that has been done before, and which has proven successful.

There is a growing literature on the technical problems involved in coal storage which is shortly to be enriched by a report from the Federated American Engineering Societies covering the whole subject. It is difficult to generalize in a subject where the number and range of variables is so great, but the matter is well summarized in the Commission's report, as follows:

> The conclusions of those who have studied the technical question of soft coal storage are that there is a proper safe way for the storage of any and all kinds of soft coal, and that improper methods will render the best coal liable to spontaneous combustion. For most coals the losses in heating value and degradation are comparatively small.

COAL STORAGE CAN BE SUCCESSFULLY HANDLED

One of the ideas we must get away from is that coal destined for storage can be considered in the same class as sand, gravel and rock, and handled as such. In this matter management has a more complicated matter to handle, but one successfully met by many. The larger part of the losses of stored coal has come from violating well-known conditions that can usually be readily met. For the small domestic consumer of soft coal the question of spontaneous combustion need never be considered. For the larger user there need be no loss from spontaneous combustion if the matter receives the careful consideration of management and operating force which the subject demands.

It cannot be shown to be the duty of every user to store coal. There are many places where the cost would not be justified. But it is the duty of every coal user to give greater consideration to the subject than in the past, and to lean as far as he can in the direction of more storage.

General Discussions

THE MARGINS OF RETAIL COAL DEALERS

By Roderick Stephens

Chairman, Governmental Relations Committee, National Retail Coal Merchants' Association

We congratulate the Academy of Political and Social Science for sponsoring this discussion on the subject of coal and welcome the opportunity here afforded to bring to light facts concerning conditions actually existing and those popularly supposed to exist in the coal trade. Fortunately, for the coal trade and with particular reference to the retail coal trade, there is available a complete and impartial report with respect to conditions prevailing in all branches of the coal business, as a result of the labors of the United States Coal Commission. In this report are comprehensive findings and authenticated facts, adequate to enable an intelligent understanding of the coal business, and a reasonable determination of what, if any, evils exist and what practicable remedies may be applied.

Proceeding without further preamble to my subject, which is: "The Retail Coal Trade," I propose to quote passages from the report of the Coal Commission briefly and to discuss them with equal brevity. The Coal Commission found as follows with respect to the retail coal trade:

> The retail coal trade, representing an essential step in the distribution of coal for household, heating, and small industrial uses, presents problems that are distinctly its own. Retail facilities, ranging from the simple equipment of the country dealer to the expensive plant of the large city dealer, are considerably overdeveloped. Undoubtedly the same service could be given in many markets at less cost to the consumer if there were a smaller number of dealers who would then use their plants and equipments more nearly to their fuel capacity. One limiting factor to reduction in the number of retailers, however, is the seasonal nature of the business which makes it necessary to maintain sufficient yard and delivery facilities to meet the peak demands of the winter months.
>
> Recurring shortages and increasing prices of recent years have created many problems for the retailer and have also centered public attention upon the trade. Great public dissatisfaction with the prices charged and the general conduct of the business is often expressed. In some cases, such criticism is undoubtedly well founded, but in others it is based on lack of knowledge on the part of the public that the causes of high prices and shortages of coal felt by the consumer are beyond the control of the retailer. Frequently, public opinion is unjustly aroused against the retailer by inflammatory newspaper articles. On the whole, it would seem that what is needed is a better understanding of the trade and its problems on the part of those whom it serves and more discriminating criticism.
>
> The results of the Commission's inquiries regarding the retail trade indicate that it is generally conducted on a competitive basis. Prices and margins have increased sharply in all sections of the country since 1918. Expenses also, especially in the last two years, have increased, so that net profits per ton and on investment have shown a tendency to decrease.
>
> In general the competitive nature of the retail trade makes regulation of margins and prices unnecessary except in cases of emergency shortage. In case such emergency regulation is necessary, it should be a part of a fully coördinated scheme of regulation covering the production, wholesale distribution, and retail distribution of coal. In case price regulation is attempted,

in fairness to the retailer and to the public, it should take the form of regulation of margins rather than the fixing of definite prices. Such regulation of margins permits the setting of different maximum margins to cover different types of trade and different amounts of service rendered by city and country dealers.

This Commission is firmly of the opinion that the solution of the problem of extortionate charges for retail coal, where it exists, is largely in the hands of the communities themselves and that where the public is alert to its rights and ready to apply the remedy no such problem will exist.

MARGINS

Discussing the above it will be worth while to define the term "margin," as comprehension of retail responsibilities necessitates an understanding of this term. The retail dealer buys his coal generally at the mines or in all cases at a price at the mines determined by the producers of coal over which price the retail trade has no control. This coal is then carried by the railroads, and in some cases by boats, at established freight rates, over which rates the retailer has no control. The retail price is therefore necessarily a compound of the mine price, plus transportation charges from the mines to the dealer's yard, to which price the retail margin, sufficient to give a fair return upon capital invested and for services rendered over and above the retail cost of doing business, is then added. This last figure is known as the retail margin, and must not be confused with retail profits, which are only a small fraction of the total margin, being whatever sum, if any, remains after the payment of expenses incident to retail business.

Referring back to the report of the United States Coal Commission on the subject of margin, we find the following:

A study of the gross margins taken by the retail dealers who filed schedules with the Commission reveals a wide variance in the amounts of margins. In the retail trade, the gross margin, or working margin as it is sometimes termed, is the difference between the dealer's cost alongside his yard and his price delivered to the consumer.

Gross margins have increased in almost uniform ratio through the entire United States during the past five years for all classes of coal. Gross margins for domestic sizes of anthracite coal are highest, those for steam sizes of anthracite being much smaller, due, in some part, to the difficulty the average retail dealer experiences in marketing these sizes. Margins taken on bituminous coal vary widely in different parts of the country, being lower than those on anthracite in some sections and higher in others.

In the case of anthracite coal, margins taken are governed somewhat in a like manner by the source of the dealer's supply, the price paid in recent years for company coal being less than the price paid for independent coal. If he is selling low-priced coal his margin may be greater with a lower selling price than it will be when he is selling so-called premium coal, even though his price to the consumer is higher.

Tonnage Handled: For the entire United States a total tonnage ranging from 11,935,331 tons in 1918 to 10,188,034 tons in 1922 was reported by 273 indentical companies. This represents about 10 per cent of the total estimated retail tonnage of the country, while the number of companies covered represents less than 1 per cent of the total number of retailers of coal. It is therefore to be noted that the investments, costs and profits shown are for firms whose tonnages were well above the average for all companies engaged in the trade. On the whole, however, the companies included are a representative sample of what may be termed the backbone of the retail trade.

The Average Margin Taken: Representing the difference between the average cost of coal f.o.b. the dealer's yard, including price paid at mines plus freight, and the average selling price for coal handled, including all sizes and kinds of coal, increased from $1.89 in 1918 to $2.51 in 1921, an increase

of 33 per cent; 1922 showed a decrease, the average dropping from $2.51 in 1921 to $2.39, an amount 26½ per cent higher than that of 1918.

Total Expense for dealers throughout the country increased parallel with margin. For the country as a whole, the increase was from $1.499 in 1918 to $2.063 in 1921, an increase of nearly 38 per cent, as compared with a 33 per cent in margin.

Average Direct Operating Profits per ton arising from the purchase and sale of coal varied from $.342 per ton to $.564 per ton, 1919 being the year of lowest, and 1920 the year of highest profit per ton.

LOSSES

Continuing the general discussion of retail conditions, it is important to bear in mind certain factors not heretofore mentioned, which play an important part in determining the retail margin, and accordingly the consumer's selling price. These factors are the element of shrinkage and the element of degradation. The retail dealer pays for his coal on the basis of weights ascertained at mines or nearest railroad scales thereto. However, serious losses of coal occur between the mine and the dealer's yard. Cars may leak and losses occur as a result. The above elements enter into shrinkage on all-rail coal, and still additional shrinkage occurs on coal that moves to tidewater-loading ports and is there reloaded on barges for water destinations. River pirates infest water junction points and organized thievery causes serious losses, particularly in cold weather when the demand for coal exceeds supply. It is a fact that an actual loss, running up to or in excess of 3 per cent in weight, occurs in this way.

The second loss referred to is known as "degradation," meaning by that term the loss resulting from the breakage of the larger and most expensive sizes of coal in the course of movement and handling between the mines and the dealer's trucks. Every ton of broken, egg, stove, or chestnut coal loaded at mines breaks up in part and creates a substantial amount of buckwheat and smaller sizes of anthracite, all of which coal has been paid for at domestic coal schedule and must be sold at the steam price in competition with bituminous coal. The actual loss on domestic sizes through degradation approximates 5 per cent of the value of the domestic sizes purchased.

At this point some will say are not these losses compensated for by the fact that coal is generally purchased on a gross ton basis (2,240 pounds) and sold on a net ton basis of 2,000 pounds? It would seem as though this 11 per cent difference between the gross and net ton would fully compensate for the 8 per cent difference due to shrinkage and degradation. However, that is not the case. The retail margin is not the difference between a gross ton alongside the dealer's yard and a net ton in the consumer's cellar, but is the difference between a net ton or 2,000 pounds alongside the dealer's yard and 2,000 pounds delivered to the consumer (except in the states of Pennsylvania, Maryland, Delaware and in the District of Columbia, where the law provides for the retail unit of 2,240 pounds). In other words, the retailer buys a car containing from 60,000 to 120,000 pounds of anthracite and pays for same at a price figured on a gross ton basis, for convenience, but actually a price figured on a per pound basis and sells on a per pound basis. There is no profit to the retailer in this practice and countless investigations have discovered, beyond all doubt, that there is no profit or loss in the varying basis of production and sale of anthracite.

Now what are the conclusions properly drawn from these authoritative facts:

First, profits ranging from $34\frac{3}{10}$ cents to a maximum of $56\frac{4}{10}$ cents certainly cannot be considered extortionate.

Second, the retail coal trade is competitive in nature and not monopolistic, nor is it conducted without regard for law.

Retail facilities are adequate, it being a matter of common knowledge that no serious or substantial failure of delivery can be laid at the doors of retail coal trade, the shortages being due entirely to interruptions in mining operations. In fact, it is pertinent to remark that no coal shortage has ever existed except as a direct result of interference with mining operations.

IN CONCLUSION

In conclusion, I think it may fairly be said of the retail coal dealer that he is a typical, average, fair-minded, intelligent business man conducting his business with a full regard for the public interest and recognizing the importance of earning the good will of his customers. Strange as it may seem in the light of self-serving political attacks upon the coal trade, it is a fact that the retail coal dealer is very much like his fellow retailer engaged in the distribution of food stuffs, dry goods, or any other commodity. As the Coal Commission has well said, such difficulties as seem to exist may be attributed to a lack of mutual understanding between the coal dealer and the public, and for that reason this volume may well represent an important contribution to the ultimate solution of whatever problem may exist as between the coal trade of this country and the consuming public.

ANTHRACITE COSTS AND WAGES AS VIEWED BY THE OPERATORS

By EDWARD WHEELER PARKER
Anthracite Bureau of Information

As I understood it, the particular job assigned to me was the discussion of Mr. Wing's paper, which was to be on the subject of "Costs of Production, Including Investment and Profits of the Operators," and that I was to have a copy of Mr. Wing's paper in advance in order that I might prepare my own remarks in the discussion of it.[1] I did not receive the advance copy and, therefore, prepared my remarks on the basis of the report of the United States Coal Commission on this subject, to which I supposed Mr. Wing's paper would be largely devoted. The fact that Mr. Wing has not spoken on the subject assigned to him is not my fault.

Moreover, since space is limited, it is not possible for me to present the remarks prepared on the discussion of the principal subject assigned to me. I shall, therefore, simply "request leave to print."

I wish first to discuss one or two statements which have been made to this conference and which I cannot permit to go unchallenged: First, that made by Mr. Cooke[2] to the effect that the anthracite operators had combined to limit the production of anthracite to 80,000,000 tons a year, having figured that the market would absorb that quantity profitably. The statement

[1] The topic assigned to Mr. Wing was "The Cost of Production, Including Investments and Profits of Operators." He was not able to complete his paper before its delivery as had been anticipated. The paper as presented is found on page 256.—The EDITOR.

[2] See page 217.—EDITOR.

is untrue. The facts are that the only limitation on the production of anthracite is that which has been imposed by nature. Some 20 or 25 years ago, when in the Government service, I predicted that the production of anthracite would not reach more in any year than a total of 100,000,000 tons. It reached its maximum of about 90,000,000 tons during the war years of 1917 and 1918. Including the coal used at the collieries, it has averaged about 80,000,000 tons during the last ten years, excluding, of course, 1922. There has never been any agreement among the anthracite operators to limit the production.

Another statement to which I must take exception is that of Mr. Walker, who, by the manner in which he stated it,[1] would have us believe that the anthracite operators had secured an injunction against the Federal Trade Commission. The anthracite operators have heretofore never declined to open their books or records to the Federal Trade Commission. The injunction against the Federal Trade Commission was secured by the Maynard Coal Company, a bituminous coal corporation of Ohio, and, when the injunction issued, the Federal Trade Commission ceased to request the information from the anthracite producers. In the language of the bench, the Federal Trade Commission should come into court with clean hands.

MARGINS OF ANTHRACITE OPERATORS

The United States Coal Commission has found, and so informs the public in a posthumous report released to the press within the past week, that some anthracite-producing companies make more profits than others. The Commission has not shown, however, wherein the anthracite industry in this respect differs from any other business conducted, as business usually is, for the purpose of earning a return upon the capital invested in it. It seems hardly necessary to say that the cost of producing a bushel of wheat varies considerably not only with favorable or unfavorable conditions of soil or weather, but with the energy and efficiency of the farmer who produces it. The same is true of any staple product. Take the metals, for instance. The costs of producing and refining them vary greatly, but the prices of the metals are the same for all producers and some make more money and some make less, and some, like some of the anthracite companies, lose money. I have never heard of the owners of Calumet and Hecla, the great producers of Lake copper, being put in the predatory class though the stock quotations rose to over $1,000 a share on an original investment of less than $25 a share.

In the anthracite industry the variation between low cost and high cost production is accentuated by the fact that, even with prices at a uniform level, which they usually are in normal times, the actual realization varies as widely as does the cost—in fact, the spread in realization is really more than the spread in cost. The more fortunately located properties will yield as high as 80 per cent in the domestic sizes, while their less fortunate competitors will not be able to obtain more than 50 or 55 per cent of the mine-run product in the domestic sizes. A little mental calculation will enable you to see what that difference is. Take 100 tons of coal with 80 tons of it selling at $9 a ton and you have $720, and 20 tons at an average price of $2.50 a ton (and that is a liberal price for the buckwheat sizes at the present time) and you have $50, or a total of $770 for your 100 tons. On the other hand, 55 tons at $9 will yield $495 and 45 tons at $2.50 will yield $112.50, or a total

[1] See page 245.—EDITOR.

for the 100 tons of $607.50, the difference in the realization for the product of the two collieries of $162.50 for 100 tons, or of $1.625 a ton.

The remedy which the Commission suggests for this condition is, to say the least, unique. It proposes that a graduated income tax shall be imposed upon the profits of those companies which through fortunate circumstances, and, possibly to a small extent, good management, are able to earn a larger return on their investments than their less fortunate competitors. It admits that this would not be of any immediate benefit to the domestic consumer of anthracite by reducing the amount of his coal bill, which is the principal cause of complaint at the present time against the producers and distributors of hard coal, but that it would be added to the revenues of the state and thus inure to the benefit of the people through reduced taxation. As in some other recommendations of the Commission, the fact that it might run counter to the Constitution or to decisions of the United States Supreme Court is of little moment.

Now it happens that one of the companies whose profits would thus be snatched from it was not always thus nor prayed that the Commission should lead it out of its evil ways of being prosperous. That particular company, as was testified before the Gawthrop Commission about six years ago, for thirty-five years of its existence never paid a dividend and was three times in the hands of a receiver. Through fortuitous circumstances and to a moderate degree efficient management, it has become a highly prosperous concern and therefore must now be penalized.

The Commission likewise has discovered that the *average* margins in the anthracite region are larger at the present time than they were before or during the war, its opinion on this matter being based principally on the margins shown in the last quarter of 1922 and the first quarter of 1923. It admits that for the entire year of 1922 the industry suffered a loss of 28 cents a ton on the total production, notwithstanding profits earned in the first and last quarters. And it ignores the fact that during the war period, as announced by the United States Fuel Administrator, Dr. Garfield, that the prices fixed by him for anthracite had not been adequate to permit a fair return on the investment for a large portion of the tonnage. But aside from that it may be asked whether, in an increase of margins, or indeed of profits, the anthracite industry has exhibited any marked exception to the general rule?

And it may also be asked if the Commission, in basing its statement of increased margins on the business done in the last quarter of 1922 and the first quarter of 1923, has been exactly fair? Production during these periods was pushed to the utmost in order to make up as much as humanly possible the deficiency caused by the strike of 1922, with the result that the output was increased about 10 per cent above normal, conditions under which margins would naturally increase. Moreover, on account of the scarcity, better prices for the steam sizes were obtained than under normal conditions. Prices on the domestic sizes by the larger companies were advanced only enough to cover the tax levied by the state, which tax had during the year been declared constitutional by the United States Supreme Court. One of the most remarkable comparisons made in this report of the Commission is that of the increase in *margins* made by the anthracite companies and the increase in wholesale *prices* of other commodities. The members of the Commission well

knew and Mr. Wing knows that the labor cost of producing anthracite had increased 154 per cent in 1921 over 1913. The surrender compelled by Governor Pinchot to the demands of the United Mine Workers of America in September increases that percentage increase to 170 per cent. The report of the United States Geological Survey just issued shows that the average value per ton realized in 1913 was $2.39 and in 1921 it was $5.60. Consequently, the increase in value per ton was 134 per cent as compared with an increase of 154 per cent in labor cost.

The Commission finds, however, that notwithstanding the increases in margin in cents per ton in the last quarter of 1922 and the first quarter of 1923, the reason for which has already been explained, on the basis of the sales realizations, the margin of the operators has (to quote the words of the Commission) "not been greatly different since the war from what prevailed before the war." The fact of the matter is that on this basis, with the exception of the two quarters mentioned, it has actually been less though the Commission does not stress that fact as it does some others. From 1913 to 1914 the operators' percentage of the sales realization ranged from 11.9 to 18. In 1918 it was 9.7; in 1919, it was 11.3; in 1920, 9.3; in 1921, 12.5; in the first quarter of 1922, it was 8.6, and for the full year 1922 it was "in the red."

To return for a moment to the matter on which I touched at first—the fact that some operators make more, much more, profits than others. The report of the Commission shows that in 1919, out of a total of 62,787,000 tons, 7,375,000 tons did not realize the cost of production, yet 11,600,000 tons yielded margins of over $1 per ton. In 1920, 12,664,000 tons were sold at less than it cost to produce them, more than 10,000,000 tons at a loss of from 10 to 20 cents a ton, and about 10,000,000 tons yielded margins of $1 a ton or more. In 1921 the "red" tonnage was less, not quite 5,000,000 tons, but so was the high realization tonnage—a little over 5,000,000 tons. The sum of the matter is that, notwithstanding some companies make large profits, the industry on the average pays only moderate returns. The entire production is required to meet the demands of the anthracite-consuming public, and it must pay the price necessary to produce it and to yield a return on the capital invested. If that price yields a larger return to some producers than to others, the more fortunate ones have committed no offense against the law.

REPORTS

The United States Coal Commission was called into being as a result of the agreement between operators and miners following the strike of 1922, which agreement contained the following provision:

> The parties unite in a recommendation to Congress that legislation be forthwith enacted creating a separate anthracite coal commission with authority to investigate and report promptly on every phase of the industry and the parties hereby ask the President to request the enactment by Congress of the recommended legislation.
>
> The continuance of production after August 31, 1923, shall be upon such terms as the parties may agree upon in the light of the report of the Commission.

The Commission has stated that it was appointed as a fact finding commission and it has published the facts—some 20 pounds of them—but if anyone has been able to find in them any constructive suggestion that will serve to prevent recurrence of such strikes as we had in 1922, "the greatest industrial dislocation in history" as proudly claimed by Mr. Lewis, he has not as

yet published it to an expectant world. Its preliminary report on anthracite was anxiously waited during the wage negotiations of last summer. It berated operators and miners in good set terms, but subsequent events did not indicate that it lent any help toward the solution of the problem.

It was impossible to reach an agreement during the summer of 1923 even "in the light of the report of the Commission." In all good faith the anthracite operators, and, I believe, the leaders of the mine workers, looked for the Commission's preliminary report in the hope that it would help them out of their difficulties, lay a foundation for future negotiations, and insure an uninterrupted supply of coal. They did not get what they looked for.

It is to be regretted that all of the reports of the Commission are weighted down with a mass of detail and of words that befuddle the reader who attempts to study them, a fault that may arise from the same cause that impelled Carlyle to apologize to his friend for writing a long letter because he did not have time to write a short one.

The Commission refers several times in its numerous reports to what it is pleased to designate as the monopoly character, or, as it says, "the peculiar economic organization," of the anthracite industry, using as one argument along this line the agreement entered into with the State Fuel Commission and the representatives of the Federal Government by operators representing more than 80 per cent of the tonnage, that they would not take advantage of the emergency created by the strike of 1922, and would hold to a schedule of prices that were advanced over those preceding the strike only a sufficient amount to cover the increased cost imposed by the Pennsylvania State Tax, which had during that year been declared constitutional by the Supreme Court of the United States. There was absolutely no agreement among the operators themselves on this matter. Each made his own price statement independently to the authorities and each fulfilled his promise.

The Commission contradicts itself to some extent when in its report on "Investment and Profits in the Anthracite Industry" it cites the action of one company which "undertook to buy up all the available coal lands . . . in order to prevent its rivals . . . from entering its territory and taking away its traffic." Such action does not indicate a community of interest for which monopoly stands.

The only monopoly in the anthracite industry (outside of the monopolistic power exercised by the United Mine Workers of America) is that which has been imposed upon it by nature. The productive area is confined within a limit of a little less than 500 square miles in the northeastern part of Pennsylvania. But its production is divided among over 100 operating companies, who under normal conditions are strongly competitive. That this competition is expressed in terms of service rather than in cut-throat price cutting does not alter the definition or application of the term. It must be borne in mind that the price of any commodity whose entire supply is demanded by the public must, as has been said by one of the former leaders in the industry, be fixed by that portion of the product that it costs the most to produce.

The year 1921 was one when normal conditions generally prevailed. If in that year the prices had been reduced an average of 60 cents a ton, 65 per cent of the entire output would have been produced at a loss; in 1920, 55 per cent of the tonnage would have been in the red, and in 1919, 63 per cent.

These are facts brought out in the reports of the Coal Commission but not commented upon. Even Governor Pinchot could only suggest that, although some of the operators could readily absorb the entire increased cost that his action imposed upon the production of anthracite (which is admitted), but ten cents a ton should be absorbed by all of them.

EARNINGS OF ANTHRACITE MINERS

I am going to assume that our readers are interested somewhat in the earnings of anthracite mine workers, and to what an extent the increased cost they are paying for their fuel is due to the increased labor cost.

In 1913 the commercial production of anthracite amounted to 71,046,816 gross tons and the total payroll estimated from the report of the Federal Trade Commission amounted to $113,320,000. In 1921, the total commercial production was 70,191,096 tons, or 850,000 tons less than it was in 1913, and the total payroll was $283,968,700. The average earnings for all anthracite mine workers in 1913 was $645. In 1921 the average earnings were $1,780 and, remember, this is the average for all employes outside of office force and includes the lowest paid as well as the highest. The average daily wages per man in 1913 was $2.51 and in 1921, it was $6.57. The increase in the average daily wage in 1921 over 1913 was 162 per cent. The increase in the average annual earnings per man was 176 per cent. The difference in the percentage increase in earnings as compared with the increase in the daily rate is due to the fact that the men worked 271 days in 1921 and 257 days in 1913.

In 1913 the cost of labor represented 66.7 per cent of the average realization for anthracite at the mines; in 1921 it represented 72.2 per cent. It can readily be seen that the price for anthracite cannot be materially reduced without a reduction in the cost of labor.

Let us see how this increase in wage rates and earnings in the anthracite industry compare with the increase secured by other classes of labor. According to a recent report of the National Industrial Conference Board, the weekly earnings of skilled labor in a composite of 23 different manufacturing industries show an increase of 119 per cent over July, 1914, and unskilled labor shows an increase of 116 per cent. Skilled labor in foundry and machine shops shows an increase of 114 per cent in weekly earnings; unskilled labor shows an increase of 124 per cent. In agricultural implement manufacturing, the weekly earnings of skilled labor have increased 107 per cent; unskilled labor, 85 per cent. In northern cotton mills, weekly earnings of skilled labor have increased 140 per cent; unskilled labor, 116 per cent. In boot and shoe manufacturing, the weekly

ANTHRACITE PRODUCTION AND WAGES PAID

YEAR	COMMERCIAL PRODUCTION	EMPLOYED	WAGES	LABOR COST PER TON	ANNUAL WAGES PER MAN	DAYS WORKED	DAILY WAGES PER MAN
1913.....	71,046,816	175,745	$113,320,000	1.595	$644.80	257	$2.50894
1914.....	70,647,008	179,679	113,035,000	1.600	629.09	245	2.56771
1915.....	68,041,751	176,552	97,975,700	1.440	554.94	230	2.41278
1916.....	66,257,602	159,869	116,243,800	1.754	727.12	253	2.87399
1917.....	74,103,739	154,174	124,781,200	1.684	809.35	285	2.83982
1918.....	72,227,000	147,121	187,544,300	2.597	1274.76	293	4.35072
1919.....	66,127,983	154,686	209,452,900	3.167	1354.05	266	5.09041
1920.....	65,458,673	145,074	237,302,900	3.625	1635.74	271	6.03594
1921.....	70,191,096	159,499	283,968,700	4.046	1780.38	271	6.56966
Increase over 1913.....			153.66%		176%		162%

earnings of skilled labor have increased 107 per cent and of unskilled labor, 78 per cent. These figures are to be compared with an increase of 154 per cent. in the average earnings of all anthracite mine workers prior to the increase granted by Governor Pinchot, which is increased to 170 per cent by that advance.

During the same period the increase in the cost of living, as shown by the same authority, has been 63.4 per cent. That is to say that the percentage increase in the compensation of anthracite mine workers under present rates will be nearly three times the percentage increase in the cost of living.

COMMENTS OF A DOMESTIC FUEL USER

By H. A. STEVENS HOWARTH
Coal Consumers' Association

It is my privilege to address you in behalf of the *domestic fuel users*, that great cosmopolitan family made up of laborers, artisans, clericals, executives, manufacturers, carriers, distributors, professionals and financiers. What a compelling force this family would exert if it would but act in unison! How just to everyone that cause would be if espoused by the whole family with enthusiasm!

Late in July a few of us householders in northeast Philadelphia thought it time to arrange for our winter fuel supply. We discussed with retailers the then recently published news of the operators' refusal to grant the demands of the miners, and the *sine die* postponement of the conference.

GROSS ABUSES

One retailer stated that within two days after the deadlock was announced and while he was still short 60 per cent of his July allotment, a vest pocket broker offered him all the domestic anthracite he wanted if he would pay $3 per gross ton more than the prevailing company price. The source of the fuel was not mentioned. The broker said he would first have to know the source of the retailer's present supply. No business was done. The retailer remarked to us, "Obviously this broker could not furnish me coal that would arrive in cars way-billed from the mines of the company I now buy from." We protested that this was insolent speculation in a necessity and that consumers should organize to protect their own interests. This retailer suggested that we would not get very far because the anthracite industry was full of dishonest practices from top to bottom.

While the first deadlock was still on, another retailer showed us a letter from a broker who said he had $300,000 invested in coal. He offered any or all of fifty carloads, already en route to Philadelphia, for $3 above the company price. This letter stated that cash must accompany the order, because credit did not go, no matter what the retailer's standing might be. This instance increased our indignation.

Another abuse next came to our attention from several sources. Operators who produce both anthracite and bituminous coal are making anthracite retailers take bituminous, whether they can use it or not, at prices above the bituminous market. In some instances several carloads of bituminous are forced upon the retailer in order that he may obtain one car of

anthracite. He has to sell the bituminous at or below market price and charge the loss to his anthracite. This increases his actual cost of anthracite, even though his books and the operator's books may show that the anthracite changed hands at a price somewhere near the published company figure. This practice is an outrageous imposition upon the retailer and upon the consumer, who must ultimately pay the bill.

WHAT THE COAL CONSUMERS' ASSOCIATION HAS DONE

We told the above incidents to others who agreed that an organization of domestic fuel users should be formed. It was felt that the public would flock to fight under the banner of a coal consumers' association which was free from entanglements with persons interested in the production or distribution of fuel. We made a start and met with some success. Our activities have been limited by lack of funds, the general public interest having dimmed after the September settlement. Our study of the domestic fuel situation has turned up other interesting facts to which I wish to call your attention.

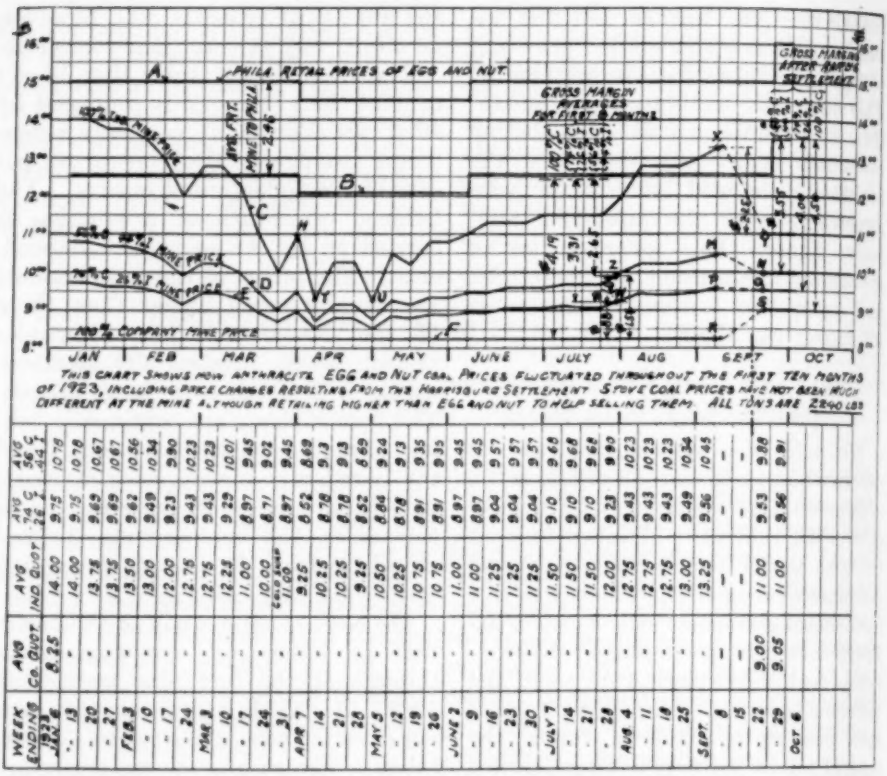
The Federal Fuel Commission has gathered a vast array of facts and figures which will be submitted to Congress together with recommendations for the correction of abuses. Our legislators will probably establish another Federal agency, for which the public will have to pay, because another essental industry has abused its privileges. Will it not be an exceptional Federal agency if it is managed with a higher degree of honesty, intelligence and efficiency than the industry it is set up to supervise?

The Fact Finding Commission has done good work. It has been criticised because it made no radical suggestions. The publicity it has given to abuses in the anthracite industry will, however, go a long way toward their correction.

The Commission states that 74 per cent of the anthracite is produced by what are known as company mines. These companies also control 90 per cent of the underground reserve. The balance of anthracite production is carried on by the so-called independents. The prices of the independents are usually much higher than those of the companies. The companies publish prices, substantially identical, which hold level over long periods. The independents are continually taking advantage of the market. When the company mines sold domestic sizes for around $8.30 per gross ton at the mines, the independents charged anywhere from $9 to $16, depending upon what they could get.

We have made a study of the variation in mine and company prices throughout the first nine months of 1923. It reveals a situation that was not expected when the work was undertaken. The results of this study are given in the attached table, but are best shown by the chart of price curves. In the column headed "Average Company Quotations" we have entered the average mine price of egg, stove and nut anthracite. This figure was easily obtained because there was little difference between the prices of the various companies. In the column headed "Average Independent Quotations" we tabulated the average market price for each week as it was indicated by tables and comments contained in coal trade journals.

In the column headed "Average .74 Company and .26 Independent" we tabulated the average price determined by using those percentages. The figures 74 and 26 were taken from the Federal Fuel Commission's report of the industry as a whole, showing the relative amount of coal produced by



THIS CHART SHOWS HOW ANTHRACITE EGG AND NUT COAL PRICES FLUCTUATED THROUGHOUT THE FIRST TEN MONTHS OF 1923, INCLUDING PRICE CHANGES RESULTING FROM THE HARRISBURG SETTLEMENT. STOVE COAL PRICES HAVE NOT BEEN MUCH DIFFERENT AT THE MINE ALTHOUGH RETAILING HIGHER THAN EGG AND NUT TO HELP SELLING THEM. ALL TONS ARE 2240 LBS

WEEK ENDING 1923	Av. Co. Quot.	Av. Ind. Quot.	Av. 56 Co. 44 I.	Av. 74 Co. 26 I.	Av. 56 Co. 44 I.
JAN 6	8.25	14.00	9.15	9.15	10.78
" 13	"	14.00	9.15	9.15	10.78
" 20	"	13.38	9.69	9.69	10.67
" 27	"	13.38	9.69	9.69	10.67
FEB 3	"	13.50	9.62	9.62	10.56
" 10	"	13.00	9.49	9.49	10.34
" 17	"	12.00	9.23	9.23	9.90
" 24	"	12.75	9.43	9.43	10.23
MAR 3	"	12.75	9.43	9.43	10.23
" 10	"	12.25	9.29	9.29	10.01
" 17	"	11.00	8.97	8.97	9.45
" 24	"	10.00	8.71	8.71	9.02
" 31	"	11.00	8.97	8.97	9.45
APR 7	"	9.25	8.52	8.52	8.69
" 14	"	10.25	8.78	8.78	9.13
" 21	"	10.25	8.78	8.78	9.13
" 28	"	9.25	8.52	8.64	8.69
MAY 5	"	10.50	8.64	8.64	9.24
" 12	"	10.25	8.78	8.78	9.13
" 19	"	10.75	8.91	8.91	9.35
" 26	"	10.75	8.91	8.91	9.35
JUNE 2	"	11.00	8.97	8.97	9.45
" 9	"	11.00	8.97	8.97	9.45
" 16	"	11.25	9.04	9.04	9.57
" 23	"	11.25	9.04	9.04	9.57
" 30	"	11.25	9.04	9.04	9.57
JULY 7	"	11.50	9.10	9.10	9.68
" 14	"	11.50	9.10	9.10	9.68
" 21	"	11.50	9.10	9.10	9.68
" 28	"	12.00	9.23	9.23	9.90
AUG 4	"	12.75	9.43	9.43	10.23
" 11	"	12.75	9.43	9.43	10.23
" 18	"	12.75	9.43	9.43	10.23
" 25	"	13.00	9.49	9.49	10.34
SEPT 1	"	13.25	9.56	9.56	10.45
" 8	—	—	—	—	—
" 15	—	—	—	—	—
" 22	9.00	11.00	9.53	9.56	9.88
" 29	9.05	11.00	9.56	9.56	9.91
OCT 6					

ANTHRACITE PRICE CHART PREPARED BY THE COAL CONSUMERS ASSOCIATION OF PHILADELPHIA. OCT 10 1923.
BASED ON INFORMATION OBTAINED FROM THE COAL TRADE JOURNALS.

the company mines and independents. In the column headed "Average .56 Company and .44 Independent" we have tabulated the figures obtained under the assumption that 56 per cent is company coal and 44 per cent independent. We understand that these are the percentages of domestic sizes that reach Philadelphia at the present time.

Some Things Philadelphia Retailers Must Explain

The first obvious deduction is that Philadelphia is getting too much independent coal. It apparently has to pay about sixty-six cents per gross ton more at the mine for its domestic anthracite than has been paid by the purchasers of this fuel as a whole throughout the anthracite-consuming district.

We ask the Philadelphia retailers to explain why they cannot get their share of company coal and thereby protect their customers, to this extent at least, against an excessive retail price.

Referring to the chart curves A, B, C, D, E and F, you will find a graphical study of price variations throughout the period covered. Curve C shows the mine prices of the independents. It is quite evident that, in spite of the curtailment of production during the strike of 1922, the company mines had produced enough coal by April, 1923, to cause the independents' price to

drop almost to the company level. The independents made a strong bid for business at low prices in April, but beginning with May their prices gradually increased. About the end of July, when the 1923 demands had been made by the miners and a strike was threatened, the independent price jumped a dollar and a quarter per ton in two weeks. It then remained level during negotiations, but advanced another fifty cents per ton on the eve of the strike.

As soon as the Harrisburg settlement took place the independents dropped their price two dollars and a quarter per ton. This large drop by the independents, when combined with the eighty-cent increase by the company mines, produced two interesting results. Taking the industry as a whole, the mine prices for the first and last weeks of September, that is before and after the settlement, were *the same*, assuming 74 per cent company and 26 per cent independent coal.

The Philadelphia situation, however, was quite different. On account of their higher percentage of independent coal the average mine price to Philadelphia retailers *dropped fifty cents* per gross ton as a result of the settlement. This Philadelphia price after the settlement was very close, that is within ten cents per ton, to the average price on the 56–44 basis for the first eight months of 1923. It therefore appears to us that the Philadelphia retailer must be asked to explain his reason for increasing his retail price one dollar per ton.

As above stated, the curves we have plotted are based on an interpretation of the coal trade journal reports. Obviously the company quotation is the most dependable because it remained level for eight months. Although the average sales prices by the independents each week were very close to the figure chosen, we have no means of knowing the tonnage sold each week. For example, if the bulk of the sales were made by the independents when their price was averaging nine dollars and a half per gross ton, the true average mine prices would be lower than indicated by the chart. Thus the retailer might be able to justify a larger increase in his price, but at the same time he would have to admit a larger gross margin.

How the Problem of Abuses May Be Solved

We suggest that the supervision of the anthracite industry provide for the publication of reliable weekly reports of sales by the operators. The anthracite-consuming section of our country should be divided into districts. The operators should then report the tonnage sold into each district together with the purchase price.

We suggest that each retailer be required to report the tonnage delivered to him each month together with the purchase price. This would give the necessary publicity for checking excessive retail margins. Retailing should be reorganized on the basis of efficiency so as to bring about the minimum ton cost of handling, storing and delivery. The number of retailers should be reduced to a minimum so that adequate profit will come only from handling a large tonnage.

The retailer should encourage purchase by the consumer in dull seasons by means of adequate differentials. The consumer should reap adequate benefit from any facilities he may install that will reduce the cost of delivery.

We suggest also that all brokers and wholesalers be licensed, and that resales be prohibited. We believe it would be best to prohibit altogether the brokering and wholesaling of domestic anthracite.

We suggest that the transportation charges on domestic fuel should be based upon the cost of the service. Fuel freight rates should not be expected to make up losses from carrying other commodities.

The check-off or virtual check-off as applied to union dues should be made unlawful in the coal or any other industry. The wage cost per ton of producing anthracite should be reduced and the miners' wages be dependent upon greater production. Labor-saving machinery should be introduced where it can be advantageously used.

Excessive royalties should be reduced, possibly fixed by law. Anthracite coal land valuation should be pared to the bone.

Uniform systems of accounting should be introduced that will reduce capital charges to a minimum.

The use of all fuels should be studied by state agencies and the people thoroughly informed so that they will know the relative values of the various fuels and how to burn them with satisfactory results. The anthracite industry needs severe competition above everything else. Each state should therefore encourage the proper use of all available fuels.

With regard to the recent anthracite settlement, are we to believe our good Governor did not know what could and what could not be put across, before he made his prosposal? Why should we expect the anthracite operators to refuse such a compromise? Was not their market threatened? They knew the public would not suffer so long as suitable substitutes were available. A long anthracite strike would have been welcomed by the bituminous industry because it was suffering from overproduction. The anthracite operators knew they would emerge from a long strike with a much smaller market because many who had been forced to burn bituminous coal would never return to anthracite. Therefore, the anthracite operators wagered that they would lose less of their market with an advance of a dollar per ton at the mine than they would lose if they put up a successful fight against the unjust wage demands of the miners, and it appears they have guessed right. The large majority of the public has, temporarily at least, accepted the price increase as a tolerable situation.

The Problem of Efficiency and Cost Reduction in Coal Mining

By Hugh Archbald, E.M.
Phillipsburg, Pa.

A FRENCH shovel is a prehistoric implement, made out of a flat piece of iron with a round nose and fastened onto a long crooked stick.

Some time after the Armistice, I visited a coal mine in eastern central France. I saw there the best hoisting machinery and best equipped shaft that I have ever seen. The manufacturers had designed the head frame and hoist with bigness and attention to little detail. But I felt as if I was back home again when I saw near by this shaft a French woman in her wooden sabots loading by hand one of those little twenty-ton canal boats and using a French shovel.

We do not wear wooden shoes and, thank goodness, we do not use French shovels, but the contrast of fine machinery and wasteful use of human labor is also part and parcel of coal mining in this country.

This contrast is not a thing of recent growth. It is for this reason that I want to present one aspect of the coal industry which has always been present and whose influence goes unnoticed.

Throw into High Relief Environment

I want to throw into high relief one part of the situation of coal mining. I shall try to do it with sympathy towards those who have the task of running mines, for it is part of the problem which they are up against. That thing which I would have you consider is (stated in its broadest form) that the character of the environment of an industry determines the character of the industry. The people within an industry cannot escape the character of their environment and though the theory of evolution is that over a period of time those who survive will be those best fitted to the environment, the human struggle consists in trying to prove superior to environment. Those within an industry are often powerless to control their environment. It is only when control is obtained and is not followed up with improvements in operation, that blame can be really cast upon the managers within an industry.

Blame Must Be Put on Broad Basis

My subject is the problem of efficiency and cost reduction in coal mining. My conclusion is going to be that the commonly understood efficiency of works management engineering has no place in primary coal mining and that any blame for this state of affairs must be put on a broader basis than the owners of mines and should include the responsible part of the public.

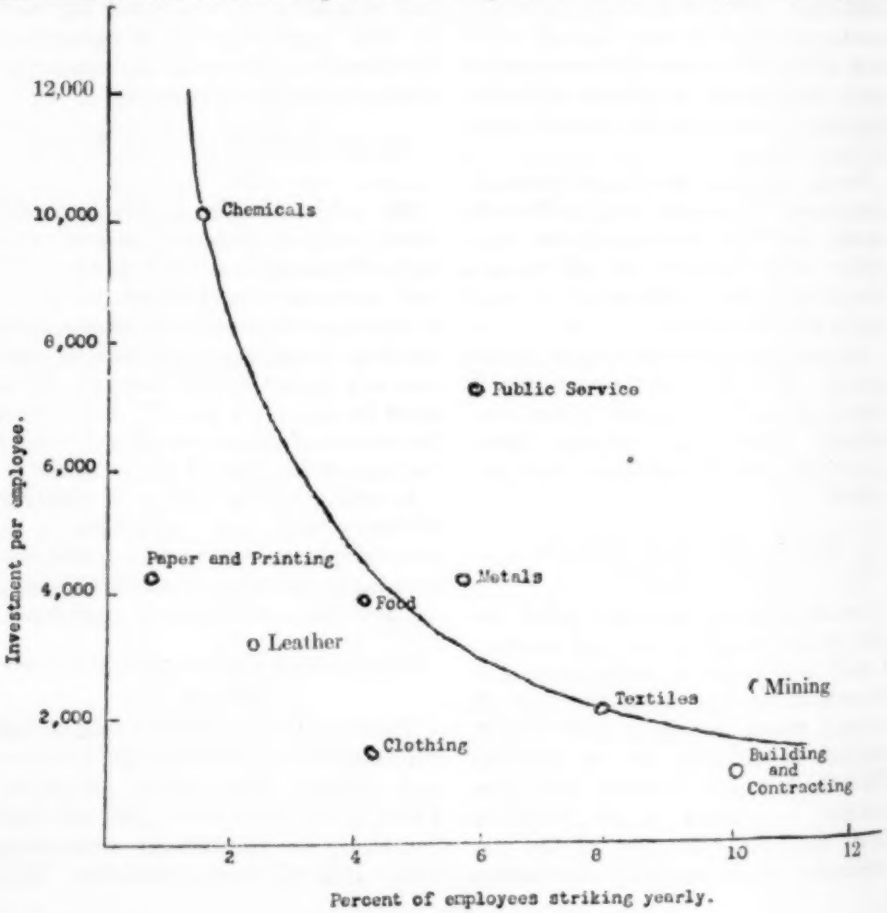
In attacking the subject of scientific efficiency and cost reduction it is necessary to go deeper into conditions than the technical questions of mine layout and the application of machinery.

Speculative Character of Coal Mining

The first thing to which I wish to call your attention is a comparison between coal mining and other industries. There is one word which you will find frequently in all writings concerning coal. It is the word *speculative*. The

President's Coal Commission of 1920 asserted concerning bituminous coal mining that this industry which was *speculatively* overdeveloped before the war is still more overdeveloped now. The recent Coal Commission uses the word speculative frequently. *But the relation between speculation and manner of operation does not seem to be realized.*

I cannot give you an exact measure of how speculative coal mining is, but I do wish to show some indicative figures. I became curious a while ago to find out if there was any relation between the amount of labor trouble and the labor cost in any industry. It is well known that the labor cost of producing bituminous coal is about 70 per cent of the total cost and that the fixed charges for investment are about 10 per cent. So I took the report of the Secretary of Internal Affairs for Pennsylvania and dug out the total investment in the industries as classified and the number of men employed, and then I divided the one by the other. That gave me how much money it took to put one employe at work and a relative measure of investment. Then from the Bureau of Mediation I got the figures, such as they are, of the numbers who had gone on strike over a period of five years. From that I got the average percentage of the total who were involved in labor troubles in one year. I combined the figures to draw the appended diagram.



RELATION TO OTHER INDUSTRIES

You will see that building and contracting here runs neck and neck with coal in the amount of labor troubles. The figures for coal include both anthracite and bituminous mining. In anthracite mining the investment per ton of annual output is about four times as large as in bituminous, and so the investment per employe is larger here than if bituminous coal alone were considered. Moreover, the figures for labor trouble include only outlaw strikes. If the national shutdowns were included, coal mining would stand out as the industry of greatest trouble.

In contrast to coal one can find industries with larger investments per man employed and less labor trouble. And one can find other speculative industries such as clothing, but one must take into account the greater strength of the organized workers and hence the lower demonstration of trouble through strikes. In general the industries do show a decrease in labor trouble with a relative increase in investment, which, inversely, is a decrease in speculation.

THE HINT OF THESE FIGURES

If you will follow the hint of these figures and take into consideration other known facts, you can begin to arrive at an understanding of coal mining. First you must separate anthracite mining from bituminous coal mining, for bituminous coal is in the same position now that anthracite held before the year 1900. Anthracite is no longer speculative. Bituminous is.

DIFFERENT EFFICIENCIES IN KIND AND DEGREE

Under the principles of scientific management, efficiency has come to include the elimination of labor troubles. With such a measure bituminous coal mining is the least efficient industry. But I would call your attention to the important fact that the efficiency of a speculation differs from the efficiency of a production problem in manufacturing. Mr. F. W. Taylor did not start his work in a preponderantly speculative industry, but in one which is half way up the list. It is necessary to point out the fact that from such a half-way industry as metal working to chemicals and industries requiring larger investments there is a change in degree. But from coal mining (and building and contracting) to metal working there is a change in kind of efficiency.

What is the efficiency of a speculation? Is it not the same as the efficiency of a poker game? Wait until you get the cards dealt to you before you get into the play. For the man who throws his chips into every pot is bound to lose. And then when you do play, make it as expensive for the other fellow as you can.

TEMPTATIONS FOR IRREGULAR PRACTICES

Moreover (and particularly), in a speculation there is the constant temptation for what is classed as irregular practice. The individual cannot afford to loose. Caught up in the fierce competition that exists in a speculative industry resulting from the low investment and consequent ease in getting into it, perhaps in the beginning innocently lured on by the stories of sudden large winnings which are a part of speculation, a man becomes sorely tried when the pinch comes, as it surely will.

Down South they used to tell me "Ninety per cent of the niggers are good. Only ten per cent are bad." The same probably holds for coal mining. But in a pure speculation it is the dishonest who are likely to be the sure winners. It is they who are likely to be the fittest to survive. For

the 80 or 90 per cent the struggle is hard.

HUMAN BEINGS DESIRE A CERTAINTY

Now it is part and parcel of most human beings to prefer a certainty to an uncertainty. A bird in the hand is worth two in the bush. The whole struggle of society has been away from speculation, for it is anti-social in that it turns one man's hand against his neighbor. Coal mining has struggled toward a certainty, honest if it can be.

You cannot get away from the venture that exists in mining. It is not possible to predict that the coal will be found of a known quality and quantity, as you can purchase raw material for manufacture under definite specifications. But you can distribute the risk by combining a number of mines, for coal which pinches in one place is likely to swell in another, and what one mine looses, another gains. This is in addition to the strength and other advantages which bigness through combination gives. And strength, of course, means working away from an uncertainty.

COMBINING FOR STRENGTH BRINGS OTHER PROBLEMS

But promptly as you combine a large number of mines into one company, another problem presents itself; the need of an assured market for all or a greater part of the coal which is to be produced. For with combination the first break is made away from the operating condition best suited for speculation.

This condition, which is most efficient for speculation, is to have a relatively small mine and to have as little as possible invested in equipment and then to depend upon the maximum amount of handwork in putting out the coal. In such a case idle days are not expensive and, when the turn of the cards has brought good times, efficiency consists in pitching in with red-blooded vigor and caring nothing for engineering efficiency or niceties of cost reduction, forcing out the maximum amount of coal and depending upon the fact that, as it is a tonnage proposition, the larger the tonnage, the lower the cost is likely to be.

It is under many years of such operation that the customs of coal mining have become established.

There is a tangled skein of circumstance surrounding coal, but through it all there can be traced that speculative disregard of production problems as developed in manufacturing industries. As a measure of how coal mining has not yet come to the point of paying attention to the commonly considered production problems of other industries, I would call your attention to the fact that a couple of years ago the magazine, *Industrial Management*, presented an enumeration of its subscribers classified according to industries and though, if my memory serves me correctly, there was one subscriber from coal mining, he was not of enough importance to be enumerated.

BITUMINOUS THE INTERMITTENT INDUSTRY

Bituminous coal mining, in contrast to anthracite, has not yet come to the point, as a whole, where it can regard the niceties of production problems. It is *the* intermittent industry. In clothing the shops may work steadily for two months and then shut down for a month. Contracting may work during its 190 days of warm weather. Bituminous coal mining works one day, shuts down for two and then works half a day. Only 5 per cent of the mines work full time. The average work three days a week. There are supposed to be about eleven thousand mines in this country, counting in all

the little country banks and snow birds. There are 8,902 listed by the Coal Commission as existing in 1920, and 1,725—the largest mines—could produce if working full time all the coal that the country needs.

STEADY OPERATION IS PREREQUISITE BUT MUST BE FOLLOWED UP

Steady operation is the first requisite for efficiency operation, and attention to production problems. But steady operation alone will not produce attention to these problems. Anthracite mining is the proof of that. The history of anthracite is that it was speculative and overdeveloped up to around the year 1900. I believe that in the year 1898 the mines only averaged 172 days. In the competition which existed it was necessary for the strong to get stronger in order to go on living and, as the area was limited, the final result was that control of the coal fell into a dozen companies. Then overdevelopment stopped and, demand catching up to supply, relatively steady working time followed. But all the body of men at work in the industry, trained under speculative, intermittent conditions, continued on the old customs without change and, as the United States Coal Commission has said, under no urge towards better operation. There was no top price which could be asked for the coal.

On the contrary, there has always been a top price in bituminous coal and, as there is so large an area underlain with it, it probably can never come under monopoly control and will always be working under the necessity of mining at the least cost.

SEVENTY PER CENT OF PROBLEM HUMAN ENGINEERING

In soft coal mining, where 70 per cent of the production cost is labor cost, the great problem is human engineering; the organization of the work of men. It is this problem which is so confounded by intermittent operation. This problem is greater in coal than in such an industry as building where the material cost is twice as large as the labor cost.

Machinery has been introduced into mining, more into soft coal than in proportion into anthracite, according to the Coal Commission, but I do not know a mine in this country which could be classed as full machine mining. The common term of machine-mined coal is a misnomer unless you understand the slang of the mines where mining is used to designate merely the undercutting of the coal—the undermining of the coal at the individual faces—preparatory to blasting. The bigger portion of the work is still done by hand.

CRAFT WORK

It is necessary to realize that the first way of mining is massed craft work. The individual miner at the face digs, cleans and loads the coal. It is a finished product when it leaves him and all that is added to it is transportation out of the mine and over the railroad. That is the most efficient method for speculative operation as it involves the least investment. A third of the soft coal—175,000,000 tons a year—is still mined in this fashion.

PROBLEMS ARISING FROM INTRODUCING MACHINES

As soon as undercutting machinery is introduced into any mine, a break is made away from the most speculatively efficient condition and real production problems begin to enter. It is here that mine operation has had no leadership from such organizations as the American Institute of Mining Engineers.

For with undercutting machines to

do part of the work—the most skillful part—of the work of a miner, there comes a division of labor. Instead of having two parts to the underground work, transportation and craft work, you have three, transportation, undercutting and loading. With divided labor there is a need of increasing the amount of supervision of the work by at least 50 per cent, considering only the division of labor.

Many a soft coal operator has introduced machinery into his mine in the high hope of seeing his costs reduced, and found instead to his great discouragement that his costs went up. The reason is simple. Intermittent operation is constantly dragging him back toward speculative operation and he has changed his situation for being speculatively efficient. Machinery brings along with it the need of changing the layout of the work so that not alone can men work but machinery work efficiently. The openings which are driven must have different proportions. With craft work these proportions do not matter. With machines they are vital.

The consequence is that with machines not alone is there a need of increasing the quantity of the supervision but there is also a need of increasing the quality. It is part of the production problem. It is hard to solve while intermittent operation is constantly forcing the employment of the cheapest and fewest number of bosses that idle days may not be expensive. For idle days are the largest single expense item in producing coal.

HARD TO CHANGE PERSONNEL

It is easy to instal or change machinery in comparison to changing personnel. In teaching a night class of men who aspired to become mine foremen (and some of whom were already foremen) I found that most of them had gotten no farther in school than the 5th grade, and when it came to teaching them mathematics, practically all of them were stuck at long division. Installing machinery in a mine means using electricity, which is one of the newest of sciences and not at all simple. Electric motors cannot be repaired with a miner's axe. It requires skill to use them. It would be ludicrous, were it not so pathetically costly, to see the way electrical equipment is often used: motors used at the far ends of mines without any return circuit being provided.

It is a fact relative to this personnel problem that three quarters of the graduates of mining engineering schools have gone into metal mining, though all metal mining combined is not as great as coal mining. The other quarter of the graduates have gone into law and real estate and so forth. One I know was manufacturing corsets. Some few are stranded in coal mining.

"PRACTICAL MAN" REQUIRED BY LAW

The law of all the important states requires that the mine foreman shall be a "practical man" who has had a number of years' experience underground. Mining coal and laying track does not teach a man that main problem of the mines—organizing the work of the large numbers employed. It does not teach him anything of paper and pencil work. In going over one large company I found that all the mine foremen were practical men as the law required and that, with the exception of one, all the superintendents had been promoted from the position of mine clerk and knew nothing about standing a prop or underground work, but could write letters and keep accounts as their position required.

HARDER STILL TO CHANGE CUSTOMS

Again, it is easier to obtain machinery and to change personnel than to change customs. Anthracite operators still speak of their work as a speculative industry. It may be part of the "conservatism" which the recent Coal Commission says has "fastened upon their engineering and management methods."

In my day as a foreman in the anthracite mines—the old organization has passed away so I feel free to mention the incident—the one thing which we could be sure that the superintendent would do when he came to pay us a visit was to go over the sheet on which the miners were credited with the number of cars they had sent out, to see if the docking boss had docked everyone 10 per cent. The day for such a cost reduction had gone by, but the custom held on.

RAILROADS HAVE CHANGED EQUIPMENT, BUT SAME USE CONTINUES

The lack of attack on production problems that exists in coal mining shows itself in many ways. The speculative attitude toward the work has blinded many to changes which have come around them. For instance, in the last twenty-five years the railroads have radically changed the equipment which they supply to the mines and the mines have gone on using the new equipment in the old way. The railroads formerly supplied flat-bottom cars having a capacity of sixty or eighty thousands pounds. Nowadays they supply hopper-bottom cars of one hundred to one hundred and forty thousand pounds capacity. In the old days it was easy for a slate picker to examine the coal after it had been loaded into the railroad car. Nowadays that same slate picker spends two thirds of his time climbing into and out of the car and doing no useful work and at the same time being in danger from the dumping of the coal overhead. Moreover, at least a quarter of the coal falls into the cars in such fashion that it cannot be inspected. As a result the temptation for the men inside the mine is to take a chance on getting by with loading dirty coal. In consequence the work of the mine foreman inside the mine is increased, as they have to watch dirty coal much harder. And the consumer gets dirtier coal and is displeased.

Another example of the lack of hitching up mine operation to railroad operation can be shown in the car ratings. The capacity of each mine is rated in the number of railroad cars of 100,000 pounds' capacity which the mine is able to load in a day, and cars are placed by the railroad accordingly. The terrific increase in the number of mines during the past few years has come in the class of small mines. If you take a list of ratings for a region such as the Central Pennsylvania field along the Pennsylvania Railroad, you will find that the mines have capacities of 2.5; 6.3; 1.1; 4.7 cars per day. The large mine is exceptional. How can a railroad place 0.5 of a car at a mine? It cannot. What happens? It places two cars the first day and the mine operates at 80 per cent of capacity with consequent increase in cost. The next day the mine is given three cars but can fill only, say, two and a half, and so has one car left at night time partly loaded. This is counted as a full car against the next day and the mine may get only one car and be able to work at only 60 per cent of capacity.

In dull times, when most of the small mines are shut down and cars are plentiful, such a jumble does not occur, but in period of shortage and high prices it makes confusion worse confounded.

ELEMENTS OF WORK NOT OFTEN WELL PROPORTIONED AND MINES OVER-MANNED

There are other common features of coal mines which are not even efficient for speculative operation. It is rare to find the various elements of the work well proportioned to one another. It is common to find a soft coal mine with a tipple having a capacity to load six hundred tons a day; to have it built over a siding having a capacity of four hundred and fifty tons a day; and then to have the main road haulage out of the mine limiting the whole output of the mine, with a capacity of three hundred and fifty tons.

It may be an unfortunate part of my experience, but I have never yet been in a mine which did not have too many men working on coal. An anthracite mine had enough men for fifteen hundred tons and an output of only nine hundred. A soft coal mine reduced their number of men on coal by 20 per cent and by so doing increased the mine output by a third. I was reliably told that one anthracite company during the war lost 25 per cent of their men and never missed them, and that in fact they increased their output. As a general rule there are so many men underground that they get in one another's way and most suffer from unemployment within employment.

NEED FOR KNOWLEDGE OF WAGES AND EARNINGS

For the salvation of all coal mining there is a need of bringing forth a knowledge concerning wages. Economists have long established the principle that the price of wheat, for instance, is determined by the least efficient and most poorly situated farms, which are called the marginal producers. In the matter of wages the same sort of theory holds. The rates must be high enough to allow the least efficient and most poorly situated workmen to get a bare existence. Mine operators when in argument with unions point out the earnings of the highest men, whereas their eyes ought to be glued continually to the other end of the scale where the red danger flag flies. For if a manager of a mine enlarges the inefficiency of a workman by the fact that he remains unproductive during the time he is ostensibly at work, he creates a danger of forcing the establishment of excessively high rates of wages.

GETTING AWAY FROM UNCERTAINTY

I have mentioned previously that mine operators have attempted to get away from the uncertainty of speculation and work towards a condition where consideration of production problems would naturally follow. In the 1890's in the bituminous fields there existed the abuse that those who did not possess the favor of the railroads could not get a siding, and often when possessing a siding could not get cars. For many years now any mine which wanted it could get a siding and received its fair share of cars. But that has not pulled the chestnuts out of the fire of coal. It has not produced the results desired for coal. The market for coal has remained the same. A typical mining company situation came to my attention a few days ago. I was talking with a man concerned in the operation of a well-known rapid transit system. He remarked, "We generally buy our coal from Johnnie Blank. Do you know him?" He mentioned a large coal mining company and I knew one of the district managers. The transit man went on to explain. "Mr. Blank is a good sport. If he does not get the contract one year, he smiles and says, 'Well, I will

next year'." The manager out at the mines, on contrast, remarked one day: "Coal mining has got to get over its trick of selling coal ten cents a ton under the other fellow and then expecting us out at the mine to take it out of the men."

The rapid transit does not really understand what it is doing and how it is hurting itself in the long run. By buying from two companies it keeps two companies trying to make ends meet. Each year one company gets the contract and has to make up what it lost the year before through uncertain markets. And of course in such a situation the transit company pays in the long run a high price for its coal.

NEED FOR CONTROL OF MARKET

The prerequisite for any operator to get away from a speculative environment is to control his market. The difference between the large anthracite companies and the large bituminous companies is that in the one there is control over the supply and hence over the market, while in the other there is only control over the market.

One might expect that each control would produce the same results, but they do not. In bituminous coal there is always the urge of possible outside competition, so that when financial ease, resulting from steadier operation, arrives, more investment can be made in machinery and better organization of the work. The H. C. Frick Coal and Coke Company, the subsidiary of the Steel Corporation, in 1916 reported an output per loader per day of nineteen tons. The average for Pennsylvania is only seven and a half; roughly a third as good.

For the man without control over his market, if he improves his mining methods his neighbor can copy and cut in on him in the open market, and he finds himself in the end in a worse position than he was before, because his fixed charges have gone up and his operating time is no greater. I do not wish to be understood as saying that there does not exist a real opportunity for some operators of going the whole hog in changing their operating methods and slipping one over on their competitors. For there exists a real chance for some to profit while the others hang back.

THE MARKET CONTROLS THE MINING

By and large, however, it has been the market which has controlled the mining. It probably will continue so in the future. It is an aphorism of coal mining that the sales end is the profitable end and the production end unprofitable. From the point of view of the producer the tail waggles the dog, though there may be a mistake as to which is dog and which is tail.

But who waggles the tail? Before anyone begins to cast stones at the inefficiencies of coal mining, I want you to remember that out of 2,000 pounds of bituminous coal as it leaves the mine only 76 pounds get translated into useful work. The inefficiencies of anthracite are equally notorious.

The inefficiencies of coal mining stand out large as they are bulked together. The wasteful use is distributed and does not attract as much attention.

WRONG CONCEPTION OF COAL

I have burnt my fingers so many times on this question of efficiency of operation and consequent cost reduction, that I feel as if I knew it. The thing which stands out for me personally is that there is a wrong conception of coal. Anthracite is peculiarly a domestic fuel and the character of its market cannot change without a loss. It does not have the intrinsic values

which bituminous coal possesses. With bituminous coal the character of the market can change with a gain. There are only two permanent parts of bituminous coal; the ash and a fraction of the tar. All the rest is consumable in the form of power. As long as people think of coal as coal, inefficiencies will prevail. But when people generally think of coal as power, then changes will come.

For then bituminous coal will be put through a manufacturing process and the character of its market will be changed. It will be bought under definite combinations from certain sources. The manufacturer will not shop around here, there and everywhere from day to day, tempting many to mine and giving no one real work. Encouragement of speculation through manner of purchase will be eliminated.

It is in this way that I come back to my first statement that the responsible part of the public should bear some of the blame for the inefficiencies and high costs of mining coal. The cost of coal amounts to only 2 per cent of the whole manufacturing cost of the country. In railroading where the cost of coal has a high proportion to the total cost, it is between 10 and 11 per cent. Now a saving in 2 per cent of the manufacturing cost is not a thing to attract much attention. In consequence there is much careless use of coal and the sequence of events begins.

Careless use begets carefree buying.

Carefree buying begets uncertain sales.

Uncertain sales means speculative operation.

Speculative operation entails inefficiencies and high costs and all the scandals and ills which coal has exhibited for a century and more. Efficiency cannot be pushed onto the coal industry. The environment should be such as to induce it naturally.

The users really control the environment in which coal mining works. I, personally, have come to believe that as long as raw coal is used, raw work will continue in coal mining.

General Discussion

JAMES B. NEALE
Thorne, Neale and Company, Minersville, Pa.

I MUST admit that the paper by Mr. Archbald, whom I have known very well for many years, rather surprised me. I had anticipated a somewhat technical discussion as to the efficiencies or inefficiencies which go on in the coal mining business. Instead of that he said that he would have to "dig way down below the question of efficiencies in various mining practices." I fear he has "dug a hole" so deep that my head will hardly show over the top of it because I do not quite see just exactly what he is driving at. This is candid and from the shoulder, but I know Mr. Archbald will forgive me.

As nearly as I can tell from Mr. Archbald's paper he claims that coal mining is a speculative industry for two reasons: First, there is present that uncertainty as to conditions which is present in every mining undertaking, and second, there is great uncertainty as to the market. On account of these speculative conditions he feels that the operators are fearful of making investments sufficiently large to properly equip the mines for efficient operation. Mr. Archbald divides the coal mines in the United States into two groups, one group consisting of about 1,725 pits which are alone capable of supplying the market, and the other group consisting of about 9,000 pits which are known in the trade as "snowbirds" and which produce only in times of shortage caused by strikes or insufficient car supply. It seems to me that Mr. Archbald must have had uppermost in his mind the 9,000 "snowbirds" when he wrote his paper and that he gave little or no thought to the 1,725 well-equipped operations. I cannot conceive that he feels that the speculative aspect of the business has prevented these mines from being well equipped and efficiently operated. In so far as my personal knowledge goes, I do not hesitate to say that there are very many bituminous mines which are splendidly equipped and ably managed, the owners having been willing to spend whatsoever was necessary to put them in this condition. They are not perfect, to be sure. I know of no business enterprise which is perfect. Mr. Archbald states that there are no machine mines in view of the fact that while the coal is mined mechanically it is loaded by hand. This seems an unjust criticism since a reliable mechanical loader has not yet been devised. The operators are eagerly awaiting the perfection of such a machine and are spending much money and thought in experiments on mechanical loaders. Surely it is unjust to criticise the operators and to designate them as inefficient because they are not making use of a machine which is not in existence.

ANTHRACITE NOT INEFFICIENTLY CONDUCTED

As to anthracite, Mr. Archbald contends that the ordinary uncertainty of mining is still present but that the uncertainty of the market has passed and that in spite of the removal of one of the speculative elements the business is nevertheless inefficiently conducted. He says that this condition is due to the fact that there is no "urge" and that there is no "top price." Again I am greatly surprised. To my certain

knowledge there is a constant urge and there is a top price under normal conditions. Even under the abnormal conditions which have obtained very largely during the past five years, the operators have felt a powerful urge towards efficiency in order to make a fair profit at the lowest possible prices, realizing full well that high prices are a serious menace to the industry.

In normal times there is beyond doubt a "top price" and it is not high enough to allow inefficient operators to continue in the business. This is especially true with the operators in the southern field who must contend against unfavorable natural conditions and the great disadvantage of mining friable veins which produce a much less percentage of the domestic sizes than do the veins worked in the northern field. You may be surprised to know that the average price received for all sizes at a colliery in the southern field is very materially less than the average price received for all sizes by a colliery operating in the northern field, even though each operator receives exactly the same prices for each one of the eight different sizes of coal. I know of one case where this difference in average price received for all sizes was as much as $1.15 per ton and I feel quite sure that the difference will average at least 75 cents per ton. This great difference in average price received for all sizes is undeniably a terrific urge to the operators in the southern field where a large percentage of the total anthracite tonnage is mined. The operators in the northern field, who have a great advantage in the average price received for all sizes, are nevertheless impelled to do, and do do, their very best and are equipped both as to mechanical appliances and as to organization to produce their coal at the minimum cost.

Taking it by and large, I feel that Mr. Archbald's statement of inefficiency in coal mining is entirely without foundation in fact in so far as the anthracite mines and the well-established bituminous mines are concerned. He is probably right in regard to the "snowbirds" concerning which no one save the owners are particularly interested.

L. W. WALLACE
Executive Secretary, Federated American Engineering Societies

The author begins his treatise by saying

> My conclusion is that the commonly understood efficiency of works management engineering has no place in primary coal mining and that any blame for this state of affairs must be put on a broader basis than the owners of miners and should include the responsible part of the public.

I readily concede that the public has a responsible part in the conduct of any basic industry, and this includes coal mining. That the consuming public is largely to blame for the inefficiency in coal mining is evidenced by the highly seasonal demands made upon the coal industry, forcing the mines into an extremely intermittent operation. The wastefulness and inefficiency resulting from irregular operation are incalculable.

The public can greatly reduce these ills by equalizing its coal buying so that the market would be more uniform throughout the year. One means of accomplishing this would be the purchase of coal on contract, having it delivered during the summer months, and providing means to store the coal during the period of low consumption.

I am in total disagreement with the statement that "works management engineering has no place in primary coal mining." This is too broad a statement—there is no industry so complex that the fundamental principles and practices of management engineering cannot be applied with profit. The advisability of adopting scientific principles in the management of coal mining has been disclosed by the U. S. Coal Commission's report. It very specifically states that there are some mines as well organized, equipped and managed as are the best industrial plants. Unfortunately, there are very few such mines in the bituminous industry. It is also true that this industry employs very few mining engineers, not anything like the number it should, in view of the large number of engineering problems involved in bituminous coal mining. In contrast, metal mining is almost entirely directed by mining engineers who have applied the best principles of management engineering. The metal mines have been profitable and in consequence the public has not been put to any embarrassment or hardship.

The author is undoubtedly correct in saying the coal operators are not interested in scientific management for the reason that more attention has been given to selling. This fact no doubt accounts for many of the ills of the industry. The sales or promotion type of mind rarely makes a good operating manager. It has been this type of manager that has wrecked many organizations and probably that is why the bituminous coal industry is nearing the shoals. It is my thought that coal mining is in dire need of a works manager, using that term in its most modern and true sense. Philadelphia has witnessed what a real works manager can accomplish in the work of Mr. Mitten with the Philadelphia Rapid Transit.

The author states that the manner in which an industry is conducted determines the social results. In this I fully concur. Show me an industry that is conducted upon sound and fundamental principles seasoned with a sense of fairness and I shall show you an industry from which constantly flows social values of the highest order. One does not have to go far afield to find such an example and, on the other hand, the opposite type is also near by.

The layman can easily distinguish the difference between the social values that issue from each. In my judgment the amount of investment per employe is no criterion as to the labor conditions, because one plant may have labor-saving equipment—hence a large investment per employe in comparison with another—whereas the management of the former may have altogether disregarded the extreme importance of human relations. Again, a given plant may install such equipment resulting in a reduction of the number of employes and increase in the investment per employe without any change whatsoever in its general labor policies. The fact is that the industries of this country have so perfected the control of the physical forces and have so neglected the acquisition of a like knowledge of the human forces that the understanding of and control of the latter is lagging by some 60 to 70 years.

It seems to me that the author was not justified in not considering the number of men involved in national as well as outlaw strikes. Each type of strike means stoppage and both should be taken into account in endeavoring to arrive at some index figure.

The statement that "one must take into account the greater strength of the organized workers and hence the lower

demonstration of trouble" does not check with my observations and belief. For example, building, textile and coal industries are highly organized. Yet is it not true that it is in these very industries that there has been the greatest demonstration of trouble through strikes?

I exceedingly regret that the author feels that mine operators have had no leadership from the American Institute of Mining and Metallurgical Engineers. This is undoubtedly due to the author's lack of acquaintance with the Institute's activities. This organization has taken a very prominent position in shaping the leadership of metal and anthracite coal mining in this country and abroad. And why? Because the metal and anthracite industries have recognized the essentiality of employing mining engineers and hence they have been guided by their training and experience. The bituminous industry has not taken the same position. It has employed very few engineers and very naturally has not had the leadership of mining engineers nor that of their professional organization. It is not the Institute's fault but clearly a remissness on the part of the industry. But, notwithstanding this position of the industry, the Institute has devoted a great deal of thought and effort to the problems of the industry. Such an indictment disregards the work of the Bureau of Mines and the Geological Survey, a large number of the staff of each being members of the Institute. Again, it disregards the work of such men as George Otis Smith, H. Foster Bain, John Hays Hammond, Herbert Hoover, Edwin Ludlow, G. V. Norris and a score or more of others who have put forth earnest efforts in behalf of the industry.

In conclusion I wish to reiterate my conviction that the author is in error in his conclusion that management engineering has no place in primary coal mining, that on the contrary this is one of its most outstanding shortcomings and one of its greatest needs.

H. S. PERSON
Managing Director, The Taylor Society, New York

Mr. Archbald's paper is a plea of an operating manager on behalf of those owners and operating managers in the bituminous coal industry who are victims of an environment which obstructs efficient management; and a criticism of the mental attitude of other owners and of the public which has made that environment what it is or permits it to remain what it is. Reduced to syllogistic form his main argument runs somewhat as follows: First, bituminous coal mining is a highly speculative industry; second, the more speculative an industry the less attractive and the more difficult is efficient management; third, therefore as long as the bituminous coal industry remains highly speculative it will continue to be inefficiently managed. Another argument, secondary because less completely developed, leads to the author's conclusion that speculation in the bituminous industry cannot be removed by the initiative of private ownership alone, and that there must be some form of coöperation by consumers who are largely responsible for the speculative environment which renders relief through private initiative difficult or impossible. Finally, there is the suggestion that for technical reasons the coöperation of consumers

should take the form of such a regulation of the industry as will secure an economical conversion of coal into power at its source and an economical distribution of this power to consumers.

I doubt whether the first premise of Mr. Archbald's argument—that bituminous mining is a highly speculative industry—will be seriously questioned. There may not be agreement, however, on the second premise—that the more speculative an industry the less attractive and the more difficult is efficient management. It is to this premise, therefore, that I propose to give my attention.

EXAMPLES OF GOOD MANAGEMENT IN RELATION TO DEGREE OF STABILIZATION

I am in agreement with that generalization; otherwise I should have to acknowledge a serious inconsistency, for it has been an important point in some of my own discussions of the management problem during the past two years. It is true, I believe, not only of the extractive industries, but also of the secondary manufacturing and distributive industries. A close study of the better management movement during the past decade discloses the significant fact that the outstanding cases of superior technical management represent instances in which such excellence of technical management has been correlative to some form of stability (*i.e.*, absence of chance and the speculative element) in the operating environment. Let us first cite some typical cases.

The Standard Oil Company became some twenty-five or thirty years ago a pioneer representative of a high degree of efficiency in technical management. Having enjoyed a stability of conditions which resulted from a monopolistic or quasi-monopolistic control of the raw material and the consuming markets, certain abilities in that organization had been freed for attention to refinements of management. It is an open question whether constantly improving technical management is not *certain* to follow such a stability of market conditions as results in a normal flow of orders and a continuity of processing; whether better and better technical management is not *certain* to result from the natural initiative and ingenuity of people working together under such conditions for the accomplishment of a definite purpose.

The Ford Motor Company has long enjoyed a unique stability of conditions as a basis for the development of a type of technical management superior at least in economy of production. Speculative in its inception, in the sequel that enterprise proved to be far from speculative. On the whole it has enjoyed a demand greater than its current capacity to supply. The consequent condition of stability made the manufacture of Ford cars a continuous process industry. Economies in manufacture were an inevitable result, not so much of any special genius, in my judgment, as of the freeing of normal ingenuity for concentration on refinements of technical processing.

The Western Electric Company, one of the finest cases of technical management in American industry, although nominally in a competitive and therefore a speculative industry, has been especially favored in its development of a superior type of technical management by a large element of stability in its environment provided by its relations with the Bell Telephone Companies. In the growing Bell Companies it has had a steady, big customer, and that stable element in its market has afforded sufficient independence of a speculative environment for concentration on the development of refinements in management.

The Dennison Manufacturing Company belongs to a competitive, and to that extent a speculative, industry. Anyone can undertake to manufacture its lines. The principal obstacle which a competitor would encounter would be, not a typical monopoly element, but the excellence of their management and the good will among consumers which has resulted from that excellence of management. One factor at the basis of that excellence has been a deliberate policy of stabilization (elimination of the speculative) by resistance to overextension relative to the possibilities of its market.[1] It aims at a predetermined volume of business each year independent of the speculative opportunity presented at any time by industrial conditions. As a reward for such self-denial, the processing of that enterprise has been made practically continuous, and an environment of relatively stable and dependable conditions established as a foundation for excellence in technical management.

The ready-made clothing industry is one of the most speculative and, as an industry, one of the most inefficient in its management. The New York ready-made clothing market might be characterized as the bucket shop of the industry—a center of gambling with general industrial conditions. It is an environment in which high-grade technical management can find no lodgment. In certain other clothing markets, on the other hand, cases of good management are found, and these managements are in most instances related to some factor of stability in the regional or individual plant environment. The Joseph & Feiss Company in Cleveland, for instance, has sought stabilization in a staple fabric—serges—and in staple models, and the resultant stability has been to the firm something like the stability of the Bell Companies' demand to the Western Electric Company. The speculative element in the environment has been reduced and on that basis an extraordinarily efficient management developed.[2]

I have cited a variety of cases representing a variety of eliminations or reductions of the speculative element in the management environment. In each instance a correlative to stabilization of conditions has been an excellence of management. Executive vision and leadership may have been important in most of these instances, but executive vision and leadership would have been relatively helpless had it not included the preliminary achievement of some sort and degree of elimination of the speculative element from the managerial environment.

CORRELATION BETWEEN SPECULATION AND INEFFICIENCY IN TECHNICAL MANAGEMENT

It is not difficult to find the explanation of the correlation between speculation and inefficiency in technical management. In the first place there is the matter of motive. If an enterprise is by nature or condition speculative, the dominant motive is profits from the speculation; from trading, from the turnover. It matters not that there may be fabrication involved; that is only incidental to the turnover. In such an enterprise what ownership —and by compulsion management—desires, is a sellers' market, a strong demand and rising prices. Then there is great enterprise activity; investment in raw-material inventories, hasty and wasteful processing and delivery of the fabricated product. The turnover is the main thing—volume production and a rapid turnover on a limited

[1] *Bulletin* of the Taylor Society, December, 1922, Vol. VII, No. 6, p. 229.

[2] *Ibid.*, October, 1921, Vol. VI, No. 5, p. 187; and August, 1922, Vol. VII, No. 4, p. 120; see also October, 1922, Vol. VII, No. 5, p. 176.

capital investment and a small margin of profit. Then when the sellers' market gives place to a buyers' market, when prices are declining, there is retrenchment of investment and of activity; inventories are cleaned out, workers are discharged, and the game becomes one of sitting tight until there is another favorable market. There is no interest whatever in developing a system of efficient technical management which is dependent largely on the securing, training and retention of a body of efficient workers and managerial executives.

In the second place there is the matter of technical difficulty in developing and retaining an efficient system of management in the midst of instability of conditions—and speculation means instability of conditions. The three great foundation stones of a structure of high-grade technical management are: First, regularity of orders; second, continuity of processing; third, low turnover of the working and executive personnel. On these foundation stones can be reared a managerial structure of standardization of product, equipment, processing and craft ability; and of a system of operating control which can be effective only to the extent to which the elements of standardization are present. These foundation stones cannot be laid and the managerial superstructure raised in a speculative enterprise in a speculative industry. Managers like Mr. Archbald may desire to develop a system of economical management, but, try as they will, they cannot get a foothold. The ground slips from under them. It is no wonder that the few coal managers of his mental attitude and discernment turn from the hopeless technical task and ask the public to coöperate in giving them some stability of environment before asking of them a more efficient management.

ELIMINATE SPECULATIVE ELEMENT

May it not be that the current interest in such things as the problem of cycles, in industrial barometric reports, sales engineering, and budgeting and master planning, indicates an unconscious realization on the part of many managers that the opportunity for excellence of technical management varies directly with the elimination of the chance, the speculative, element in the managerial environment; and that the individual enterprise must effect some sort of stability in its particular environment in order to develop the high quality of management which, it is becoming more apparent, is to be the principal resource in the period of intense competition ahead? I believe so.

My particular purpose has been to support Mr. Archbald's premise that a speculative managerial environment is a deadly enemy of efficient, economical management. If that premise of Mr. Archbald's argument be accepted, and if the other premise—that the bituminous coal industry is highly speculative—be accepted, then it logically follows that public relief from evils in the coal situation cannot be secured through better management of the mining and distributing operations unless something is done to eliminate or reduce the speculative element in the mining economic environment. Better management in that industry will not come from *mere criticism* of present management or *mere talking about* the need of better management. The majority of individual owners and managers are helpless victims of any unstable environment, and apparently only coöperation of the general public can modify that environment so as to make it more favorable to good management for the public benefit.

WAGES AND EFFICIENCY AS VIEWED BY MINERS

T. D. STILES
Editor, *Penn Central News*

The miners' first interest in the coal industry is that it provides them with a means of earning a livelihood. Their share of the product of the industry is represented in wages. They contend for the right of securing the highest wages for their labor which the industry can afford. They measure wages by the purchasing power of their yearly income. They make little complaint if their daily or monthly wages sink below the average providing they are given an opportunity to make up their losses in the succeeding months. They hold that each class of service should be covered by a specific scale and that no service should be rendered without compensation. And, furthermore, that special or extra time service should be paid at higher rates.

They consider it their natural right to bargain collectively on all matters relating to wages and working conditions. Their understanding of collective bargaining is the construction and uses of negotiating machinery between themselves and their employer. They look upon the social service of coal as something separate and distinct from their interest as wage earners. This is not due to a lack of appreciation of the service which coal gives to society, but to the fact that industry is not socialized and the miners cannot understand why special consideration should be required from them.

The miners have confidence in their ability to protect their interests through collective bargaining with their employer. They are not distinctive in the selection of their employer, whether it be individual, corporation or state. It is the machinery of negotiation more than ownership that interests them. They will accept any plan that clearly recognizes their right to secure the highest wages which the industry will afford and does not interfere with the right or efficiency of collectively striving to this end.

They are, and have been for years, fully aware of the disorganized state of the coal industry. They have pled for the correction of these abuses and repeatedly endeavored to arouse interest on the part of the public and action by the Government. Apparently the only effective effort was that of the strike, the most destructive of all industrial actions. Their repeated appeals to the public and the Government are evidence of their interest in the public welfare and belief in the justice of their demands. It is only when the public or the Government proposes methods of control or negotiations that jeopardize wages or the right of collective bargaining that the miners object.

WAGES

Wages have always been a matter of bitter controversy between the miners and the coal operators. In the unionized fields of the bituminous industry a wage scale with some degree of uniformity has been established. This has been made possible by the application in part of one of the recommendations of the Coal Commission; namely, collective bargaining on a system of national negotiation with district agreements. It is plainly apparent that no degree of uniformity of wages in industry can be attained without some means of establishing a basic scale. The reason that this

plan has not been more effective in the past is that all of the coal operators were not willing to become parties to such an agreement. The non-union operators denied their miners the right of collective bargaining. In operation, this action gives the non-union operators an undue advantage in the matter of wages. Nominally they pay the union scale, but by various subterfuges and working customs they gain advantages that prevent the non-union miners from getting full benefits of the existing wage scale.

Wage rates in the bituminous industry show great gains in the last twenty-five years. These increases have not been due to arbitrary causes to which they are sometimes attributed. Neither does it signify that the miners are at present being overpaid. In the earlier days of the mining industry, working and living conditions among the miners were simply unspeakable. The miners were migratory workers. They had little or no voice in the determination of wages and working conditions. The earnings of the head of the family were usually insufficient for its plainest needs. In order to add to the scant family income, boys were placed in the mines at an early age. It was a common thing for all of the boys above the age of eight years to be taken into the mines by their fathers to get their turn. The influx of cheap foreign labor also had a depressing effect upon wages in the early days of the industry. Great numbers of aliens, most of whom were ignorant of the English language and American standards, were constantly poured into the coal mines. These people were willing to work for a mere pittance. But when these foreigners became familiar with American standards they were dissatisfied with their conditions and began to insist upon higher wages.

The compulsory attendance school law took many of the boys who were wage earners out of the mines. As the population expanded in the mining districts and the isolated mining camp was brought into closer contact with the world, new standards of living began to develop in the mining communities. This was in a large measure due to the influence upon the miners' homes of the public schools. The miners' children, and this is especially true of the foreign-born miners' children, having received some of the advantages of education, became dissatisfied with the status of the miner and insisted upon better living and social advantages. As these could only be attained by an increase of the family income, it acted as a goad upon the breadwinner, causing him to strive for higher wages and better living conditions. I make mention of this side issue of the wage question to show that increases have been largely absorbed by betterments of living and social conditions among the miners. And, furthermore, that the miners have just lately approached that level as wage earners which was justly theirs from the beginning. In other words, they are not overpaid now because they were underpaid then.

CAUSES OF DISSATISFACTION

Generally speaking, there is at present but little dissatisfaction in the existing wage rates in the bituminous industry. Irregularity of employment seems to be the greatest cause for complaint. The miners do not know how much work they will have next week. Sometimes this uncertainty will continue for months, then will come a good working period. Operators and the public then expect them to work night and day, though seldom is there any increase in their rate of pay. The miners know that it requires a certain

yearly income to enable them to live. They also know that they cannot work when the mines do not run. Then it is natural for them to reason that what they need is an increase in wage rates. It is the only means of self-protection within their hopes.

Irregularity of employment is a more important factor in the question of wages than it is generally considered. It is so essential that it should be made the first step in bringing order and equity out of the confused conditions now existing in relation to wages. Unless given assurances that they will work a sufficient number of days per year, wage scales are to the miners but gambling boards on which they take a chance. This is the underlying cause for very much of the unrest and dissatisfaction among the workers in the mining industry.

In the forming of wage scales great difficulty is met with in the differentiating of labor, made necessary or more difficult by geological conditions. Often, in a mine where the vein is low, it requires much more labor on the part of the miner per ton of coal than it does where the vein is thicker and natural conditions more favorable. This extra labor adds nothing to the value of the coal. They feel that they are entitled to increased rates for the mining of such coal and the operator contends that market conditions will not permit any additional pay. This is a constant source of irritation and it seems as if an equitable adjustment is only possible through some plan of grouping the mines of a district.

An evil which is peculiar to the bituminous mining industry is the shifting of coal production from point to point. Mines in one section are operating while in another section they are closed or are working only part time. This condition is sometimes even more localized. For example, one mine at a certain point operates every day while other mines, working the same vein and probably owned by the same company, are idle. These conditions often force the miners to shift from point to point in pursuit of their occupation. This is an economic waste which causes loss of wages to the miners and adds to the cost of coal. The lack of protection for any of the rights of the non-union operator and the lack of adequate protection in the enforcement of contract for the union miners is a source of loss in wages and dissatisfaction in spirit as well as largely responsible for the great turnover of labor.

Conciliation is the miner's favorite method of adjusting grievances, but they well know that they cannot always afford to discuss working conditions frankly with their employers. Too often the employer adopts retaliatory measures. In unionized fields they avoid this by placing their case in the hands of union representatives. In the non-union fields they have no protection, and conciliation in its true sense is unknown. And though the adjusting machinery now in use by union miners and union operators is far from perfect and satisfactory, experience has taught its practicability and its fuller development would do more toward harmonizing wages in the coal industry than any governmental agency.

WAYS AND MEANS OF GENERAL IMPROVEMENT

Considerable progress has been made in shortening the hours of work at the mines. Constant agitation on the part of the miners and the introduction of machinery in mining was responsible for these changes. In the early days there was no limit to hours and if a man received a low rate of wages he could, if physically able, increase his

earnings by working an unlimited number of hours. At one time this was a common practice. Many miners went to an early grave by working long hours under unfavorable conditions in order to eke out an existence. Happily these conditions have been made better, but there is still room for improvement. The miners are still obliged to take too many risks with life and limb. It would be unfair to place all the responsibility for mine accidents upon either the operator or the miners. Both are too negligent or indifferent. There are too many gas explosions in mines in which "there was no gas." Too many accidents due to speedup policies of the management and contributory negligence on the part of the miners. The means to correct many of these things are already provided. Laxity of enforcement is too common.

STEPS TOWARDS CORRECTING ABUSES

It would be a waste of time to give a detailed description of the abuses and the irregularities relating to wages and working conditions in the bituminous industry. To the miners they are unendurable, and harmonious industrial relations cannot be established until they are in at least a measure corrected. The first step toward correction is the fixing of responsibility for the operation of the coal industry. Until responsibility has authoritatively been fixed, the three parties interested, the public, the owners and the miners, will continue to suffer from the effects of its present disorganized state. This responsibility should be placed upon the owners and the miners. Responsibility must carry with it the power of reorganization with a measure of state regulation. The industry must be completely unionized before wages can be stabilized or working conditions made uniform and harmonious. The owners should be permitted to associate themselves in a way that would give them ample protection and enable them to negotiate with the organized miners and discharge their duty to the public. Any plan which does not fix the responsibility upon the present owners and enable them to account fully for this responsibility will eventually lead to a change in the form of ownership. Agitation on the part of the miners and the public will force this change. If a change of ownership is made it undoubtedly will be some form of nationalization. Such a change will eliminate some defects and introduce others. If the miners are to be nationalized, democratic management must be adopted if the abuses in wage and working conditions are to be remedied. Regardless of the form of ownership, the corrective measures must be worked out and applied by forces within the industry.

Most of the miners' grievances on wage and working conditions have grown out of a disorganized state of the industry or are aggravated by the same cause. Their correction is impossible without reorganization of the industry. The first step toward reorganization is to reduce the number of operating mines. All recognize this, but no hand seems to be willing to swing the axe. No plan can be offered which will not cause some loss to someone, but the direct loss would be but a dribble compared with the present steady flow of waste.

The number of operating mines can easily be reduced. *First*, by making a physical rating of production for each mine. *Second*, by requiring an operating license for each mine, such license being granted only on the conditions that the mine actually ships during each year of operation a certain percentage of its physical rating. *Third*, fees for operating licenses to be col-

lected on a differential scale favorable to the mines with the highest operating percentage. Such action would quickly cause the speculative mines and those operating at prohibited costs to close. It would place the owners of the operating mines in a better position to give service to the public and grant better working conditions to their employes. It would bring the miners in larger and more compact groups and greatly reduce the turnover of labor.

The public has many causes for grievances against the coal industry, but it, too, is neglectful of its own opportunity to improve conditions. The super-power plan opens a way that will not only improve service, but will also have a tendency to stabilize wages and working conditions at the mines. The public expects the mining industry to carry service to them. Why don't they carry it to themselves by the erection of municipal or industrial unit power plants near the mines? Of course this would require organizing responsibility, which we seem loath to assume. And thus, through the lack of ability or willingness to organize industry, we get only trouble and dissension from the wealth of coal which nature provided for our comfort.

The World's Present Fuel Resources

By E. A. Holbrook
Dean, School of Mines, Pennsylvania State College

THREE plans have been followed by those who have written on our fuel resources. The first I call the plan of the optimist. Presumably he is a widely known business man, and with his own eyes has seen vast resources of the fuel he is interested in. He knows of new discoveries having been made in (to him) unexpected places and, on interview, he maintains his own cheerful optimism by expressing belief in our boundless and inexhaustible resources and his confidence in the inventive genius of our people to meet any emergency when it shall arise. The people like to read such an interview; it saves them from all thought and worry on a subject they do not fully understand. No doubt fifty years ago there were lumbermen who took the same view of our timber resources which today have almost disappeared.

The second plan is, of course, that of the pessimist. He can figure the exact extent of the seams of coal we are mining under the conditions of today, and point to the oil fields we have exhausted. Knowing the approximate extent of these reserves, he can come to the true enough conclusion that within a comparatively few years they will be exhausted, at which time, of course, our modern industrial civilization based on power through fuel will have to cease. The weakness of these estimates is failure to recognize that the economic principles of cost and profit are the major factors in determining what is a resource. For example, no one in this country today considers a deeply buried twelve-inch seam of coal as an asset or resource. The cost of producing fuel from such a seam would be prohibitive, and yet in Belgium the economic situation covering the cost of labor and the selling price of fuel is such that a twelve-inch seam of coal is mined from great depths at a profit.

Midway between the first and second plan comes the third plan of estimating our fuel resources. This plan is based neither on optimism nor on pessimism, but is a result of the study of all known factors by competent men, and a setting forth of actual figures based on all these factors. Under this heading come the wonderful and exhaustive estimates of our fuel resources that have been made through the United States Geological Survey, particularly by Messrs. Ashley, Campbell and White; the work for the Smithsonian Institution by Wyer and also by Gilbert and Pogue; and the results of figures compiled by engineers and geologists to be found in the Transactions of the American Institute of Mining and Metallurgical Engineers and in other places. It is largely from these sources that this paper has been compiled.

It is self-evident that if we have 50 acres of coal and we mine one acre each year, the coal will be exhausted in fifty years. Nature will not renew it as in the case of growing crops. Therefore, we may for all natural fuels use the term exhaustible resources. If in turn, by exact geological reasoning, we limit the boundaries of each of our coal beds, we can certainly arrive at a definite estimate of the amount of this exhaustible resource remaining. The same line of reasoning may be applied with a greater or less degree of accuracy to

petroleum and natural gas, our other natural exhaustible resources. At this point, however, the economic factors come in strongly. How about the coal beds so impure or so thin that we cannot mine them at a profit today? If coal were twice as valuable as at present or the cost of mining were reduced—say by one half—could we not employ as a fuel many coals that we cannot consider as resources today? And by the same reasoning, could not many oil sources be made to produce their quota of oil?

Another uncertain factor in the estimation of resources is the forecasting of future consumption. If the rate of increase in consumption of fuels which we have had for the past fifty years were to continue for the next one hundred years, the production would reach almost unbelievable figures and the world would be hard put to for fuel. Again I look for the economic factor of cost of power to progressively lessen our demand and so prolong our resources.

More and more I am of the belief that future historians will recognize that James Watt (1736–1819), by his invention of the modern steam engine, accomplished the greatest revolution in the lives of nations and peoples since the beginning of Christian times, of greater influence than the bickerings of kings and princes, and in fact, by making it possible for several people to exist in space where only one had existed before, of paramount importance to you and to me.

Modern industry and civilization owe their being to power, and the way to power was lead by Watt. Before that time the life of the majority of people was what we would call existence. A man was comfortable only to the extent that man power could provide necessities and comforts. A servant or slave exerting his energy or power on behalf of the master could produce enough for his own existence and a little excess for the master. Do you know that, figured on the fuel-developed power of this country today and converting this into man power, each of us, on the average, has an equivalent of thirty servants or slaves of the old days working to make us comfortable, through light, heat, transportation, food and materials production and amusements!

This power is nothing but the utilization of the energy stored up in our natural fuel resources. Let us, therefore, examine them carefully.

1. Coal

The coal resources of the world was the subject of a careful inquiry made by the Twelfth International Geological Congress, held in Canada in 1913. In brief, they found that the land area of the world had been studied with sufficient exactness to determine the areas underlaid with coal beds, and that for the major part of these areas sufficient exploration has been conducted to determine the number and thickness of the coal seams with fair degree of accuracy. In these areas, seams one foot in thickness or over, within 4,000 feet of the surface, containing coals of present or probable future economic value, were called actual reserves; coals of economic thickness occurring more than 4,000 feet below the surface were considered possible reserves; and coals of both classes, which by reason of location could not be subjected to reasonably accurate estimates, were considered as possible reserves. While, owing to differences in method of estimation by different countries reporting, the table following of "Estimate of the Coal Reserves of the World" is not exact, yet it gives the most complete estimate available:

ESTIMATE OF THE COAL RESERVES OF THE WORLD

(*In million tons*)

	CLASS A ANTHRACITE AND SIMILAR COALS	CLASS B AND C BITUMINOUS COALS	CLASS D LIGNITE AND OTHER LOW-GRADE COALS	TOTALS
Oceania	659	133,481	36,270	170,410
Asia	407,637	760,093	111,851	1,279,586
Africa	11,662	45,123	1,054	57,839
America	22,542	2,271,080	2,811,906	5,105,528
Europe	54,346	693,162	36,682	784,190
	496,846	3,902,944	2,997,763	7,397,553

In round numbers, seven and one-half trillion tons of coal stand between the world and coal exhaustion. Compared with the world's present yearly consumption of about one billion, two hundred million tons, it indicates that at the present rate of consumption this earth has enough coal for seven thousand years, and that with an expanding rate of consumption we can figure the supply to last anywhere between two hundred years and seven thousand years, depending on the ratio of increase used. To me, the striking thing on this estimate is not that any definite period has been set for the exhaustion of our coal supply, but rather that by accurate and definite methods a boundary has been set on our supply of coal and its limits brought into understandable figures.

AMERICA'S RESERVES COMPARED TO OTHER COUNTRIES

Observe, please, that America has almost 70 per cent of the world's reserves. The United States alone has over 50 per cent of the world's reserves and Canada most of the remainder to make up the 70 per cent for America, since Mexico and South America have such small reserves that they hardly enter into the calculation. Another observation from the detailed estimates is that the United States has over one half the world's supply of coal, the British Empire about one quarter and the rest of the world the remainder.

Of the industrial countries of western Europe, Belgium has the smallest resources, France next, Germany next and Great Britain the greatest. Even with this lead, Great Britain, having closely mapped and estimated every possible seam of coal within her borders, cannot see with present ratio of increased use more than three hundred years of industrial life of the present character. Even with present production as a basis she has left only 580 times the 1913 output. McCulloch and Simpkin in an English book on coal[1] conclude that

> Our future is dependent on (1) mining of coal from the earth in the most economical way; (2) working of all power plants on a scientific basis to obtain the greatest power and improvement; and (3) making provision for a suitable smokeless fuel to avoid the wastes caused by burning the raw fuel.

Of the other countries of Europe, Czechoslovakia and Austria have some coal, but the remainder have not de-

[1] McCulloch & Simpkin, "Low Temperature Carbonization of Coal."

veloped as industrial nations solely because they have no considerable supplies of coal within their borders.

Shortly after the war, C. W. Barron, editor of the *Wall Street Journal*, after a visit to Europe, made this significant statement:

> The United States is great, not because she produces the greatest corn or cotton crop of the world, but because she has the mines to produce seven hundred million tons of coal per year or more, indefinitely.

A plentiful supply of any substance makes for carelessness and waste both in production and utilization. Here we are in possession of more than half the essence of the world's industrial civilization. Is the fact that it will last us longer than the coal in possession of the other nations of the earth any reason why we should treat it carelessly?

Some of you will ask, "How about China; has she not enormous reserves? We have read of them in the papers." Let me say that both Asiatic and European geologists have a good approximation of China's coal reserves, and after talking with American engineers who have examined various deposits there, I venture the opinion that the estimates of the International Geological Congress have not understated them.

The extent, purity and ease of mining our American coals are a source of wonderment and envy to every foreign geologist and engineer with whom I have conversed.

NECESSITY FOR CONSERVATION

The United States Geological Survey has lately (1920) issued new estimates of our own coal reserves by M. R. Campbell. He estimates an original coal tonnage within the United States of over 3½ trillion tons, of which 18½ billions or one-half of one per cent have already been mined or lost during the process of mining. If we assume the present rate of consumption there will be enough to last 4,000 years. On the other hand, if the present rate of increase in our coal consumption should be maintained, the supply would probably not last 100 years. The true life is between these extremes depending upon the real rate of increase that future years shall bring forth. It is instructive that the actual rate of increase in the decade since the first estimates were made has been greater than the estimated increase.

But we cannot dismiss our coal situation this lightly. Examination shows that over half of our reserves are the sub-bituminous and lignite coals of the West, which today we look down upon as being of low grade and of mostly local value only.

It is a fact that, even with mining continued on its present basis, less than 100 years will see the greater part of our anthracite gone, and with the best bituminous seams, such as the Pittsburgh seam of western Pennsylvania, approaching exhaustion.

While Pennsylvania produces more coal than any other state, her reserves are less than those of several other states. The Pennsylvania reserves have simply been developed more.

No one can study the figures of the Survey without becoming convinced that conservation through the best production and use of our coal should be practiced now. For all we know, population and many industries will continue to migrate in the direction of cheapest fuel, and the exhaustion of any of our coal districts would therefore cause incalculable losses in present property values over large areas. Already, according to H. C. Porter, "The fuel bill of the United States in 1920, if apportioned among the wage earners, would constitute 15 per cent

of the average income." Let us regard more highly this fuel key to our prosperity and industrial life.

2. PETROLEUM

The second great fuel resource is petroleum. The industry is generally supposed to have started with the drilling in 1859 of the Drake well in Pennsylvania. As a matter of record[2] the production of the Baku (Russia) oil field in 1819 was about 30,000 barrels, and it is recorded that in 1797 there were 520 producing oil wells in Burma with a yield of approximately 600,000 barrels per year.

That petroleum in a given field is a short-lived and declining resource is truly given by the life history of our Pennsylvania fields. Beginning in 1859 and rising to a maximum of about 31,000,000 barrels in 1891, it has steadily decreased to 7,500,000 barrels in 1921, in spite of great price increases as an inducement to exploration.

The possible oil fields of the United States have been carefully mapped and by methods already proven surprisingly accurate, the United States Geological Survey has estimated the recoverable reserves at about nine billion barrels, or at present rate of production not greater than twenty years' supply. This does not mean that we will be without petroleum and petroleum products within this time, but that we shall become, in order to eke out our residue supply, an importing nation for the greater part of our needs with an increasing price depending on our ease of access to the foreign fields.

I know some of you will say, "Why, there is an oversupply on the market right now; a big new California field has come in and not for years has gasoline been as cheap as it is today." All true, but it does not change our premises. On the whole, each year is seeing the finding of new fields in the United States more costly. A few millions of barrels excess oil from a field being drained in haste does not prolong our supply or change greatly the estimate of reserves. Within our normal lifetime we will be importing the bulk of our natural petroleum products.

VALUE OF IMPROVED METHODS OF RECOVERY

Of foreign fields I am optimistic. The Subcommittee on Petroleum of the Mining and Metallurgical Society of America has recently reported

> The oil resources of the world are much larger than the recently published estimates, and improved methods of recovery should enormously increase the difference. Petroleum may occur in almost any sedimentary rock, and the sedimentary rocks found in the United States are but a small part of the sedimentary rocks of the world as a whole. It is only that the sedimentary rocks of the United States have been more extensively developed for oil. It follows that the supply of petroleum in the United States is relatively more nearly exhausted than in the other countries.

From these facts, it is apparent that our Government should give every encouragement and protection to American oil companies now endeavoring to locate supplies of petroleum in foreign fields.

A most instructive side-light on the prolongation of our oil supplies has recently come to my attention. It is well known that our present method of pumping oil from a well exhausts only from 10 to 30 per cent of the oil in the sands at the bottom of the hole. We get only the excess that has been squeezed out of the rocks.

In Alsace during the war the Germans mined oil sands to recover petro-

[2] Report of Subcommittee on Petroleum. Mining and Metallurgical Society of America, 1923.

leum. Do not confuse this with the production of oil from oil shales, which will be considered later. Presumably the Alsace oil sands produced 20 to 30 per cent of their oil by drilling and pumping. It was reported that by sinking shafts and driving galleries in the oil sands, 30 to 40 per cent more of the oil drained into the galleries. The work is being continued by a French company who plan on treating the sands on the surface for the remaining oil.[3] Does this not point the way to further utilization of our partly exhausted oil sands when the price of petroleum products will admit?

SHALE OIL

We have all heard of the possibilities of extracting petroleum from our oil shales. Briefly, the facts are that in Scotland there occurs a shale rock impregnated with bituminous matter. This rock on being subjected to a distillation process yields a product having many of the properties of petroleum and is known as crude shale oil. Whatever the nature of this substance, its occurrence in the rocks is different from that of petroleum. With petroleum the oil flows from the porous sands by pressure alone, while the substances in the oil shale seem to become like petroleum only upon heating and distillation.

Where the price of natural petroleum products has been high, as in Great Britain, it pays in a limited way to mine and distill this shale as a substitute for some of the uses of petroleum. We have discovered that this country has enormous reserves of oil shale of similar character. For example, it has been estimated that northwestern Colorado alone contains enough shale to produce forty billion barrels of oil, or over four times our present petroleum reserve; that Indiana has a reserve from similar materials of one hundred billion barrels, and that Utah, Wyoming, Kentucky and other states have such enormous reserves that they constitute a resource in shale oil almost without limit and sufficient to last this country for hundreds of years. This is probably a true estimate of a reserve that will come into the market gradually as the price of petroleum products increase. It is safe to assert that, up to the present time and with any prices for oil products comparable with those of the past few years, no shale oil has been or will be produced in this country on a commercial basis. The shale must bear the cost of mining and refining before its product is on a cost basis comparable to the crude petroleum. Discounting yearly fluxations, the future must see a steadily increasing price for gasoline and other petroleum products. When these reach two or three times their present price, oil from shale should begin to form a commercial product. The main point is that of all the substitutes for petroleum products that have been proposed, the oil shales constitute the only reserve whose quantity is sufficient to supply the great quantity of petroleum products called for. Other proposed substitutes disappear when measured in terms of a yearly demand of half a billion barrels.

In 1922 the world's petroleum needs were 850 million barrels, of which the United States consumed 551 million barrels, or 65 per cent. Of this roughly three fourths goes for the production of power as a substitute for coal and one fourth as a motor fuel. It takes, for power purposes, about four barrels of oil[4] to equal a ton of coal. Therefore, the whole of fuel oil consumption replaces but one hundred million tons of

[3] Communication from G. S. Rice, Chief Mining Engineer of the U. S. Bureau of Mines.

[4] Two barrels of oil used in a Diesel engine are equivalent to one ton of coal.

coal, less than one sixth of our present production. It seems reasonable to summarize from the facts presented that oil will not compete with coal, except for special purposes and in certain localities where low freight rates, smaller bulk as compared with coal or comparative ease of control, make oil burning feasible. From a country-wide or world-wide situation, it is not a competitor of coal, but rather a supplementary fuel whose proportionate share in making the world's power is not likely to increase.

3. NATURAL GAS

A few years ago I accompanied a French naval mission through the Pittsburgh industrial district. The head of the mission informed me that the most marvelous thing he saw there was a natural gas well. Drawing gaseous fuel from Nature's storehouse without effort was to him like a native of the tropics sitting under a cocoanut tree and waiting for his food to be dropped to him.

Do you realize that we are the only nation that has been so richly endowed with this most convenient of Nature's fuels? And how we have wasted it! West Virginia, Pennsylvania and Ohio, the great producing and consuming centers of the East, have realized almost too late that this fuel is primarily intended for domestic use, especially as a means of doing away with the city smoke nuisance.

As a resource, the natural gas fields east of the Mississippi River and supplying many of the large centers of population roughly west of the Allegheny Mountains are on the decline. Fifty years of production and waste has seen the supply exhausted in many fields, and all charts examined show a constantly diminishing supply being sold. An instructive illustration of the accuracy with which a trained geologist may forecast the possibilities of a natural gas field was brought out during the McKeesport, Pa., natural gas boom in 1919. Here a large and profitable well had been found and many companies were formed to drill similar wells to the supposedly inexhaustible resource. The state geologist of Pennsylvania, Dr. George H. Ashley, after an examination of the data available, stated publicly that the wells would be exhausted by a certain date only a few months in advance. Certain citizens of that vicinity ridiculed him. His prediction was verified with an error of less than a week.

West of the Mississippi, particularly in Louisiana, Texas and Wyoming, there are considerable resources of natural gas. They are, however, not important as a fuel supply for our northern and eastern centers of population. The longest transmission pipe line for natural gas is about 340 miles and it has not been a success, owing to the high cost of pumping and maintenance. Generally speaking, the exhaustion of our supplies of natural gas as it is being used today is a matter of a generation only.

This, best of all fuels, having twice the heating power of manufactured gas, should not be made to compete with coal as an industrial fuel, but should be saved and utilized for domestic purposes only.

4. WATER POWER

Water power is a fuel resource just as clearly as is coal, since more than two thirds of our production of coal is used for the production of power. Considerable space has been devoted lately in the newspapers to extravagant claims as to the days when we should heat all our homes and derive all our power from this "white coal." The facts are that the writers do not realize how much power is derived from coal

today and how little is probable from water power, present and future.

The United States Geological Survey, after an exhaustive survey of all the streams of the United States, has told us that if all their energy were utilized, we would have 46 million horse power at our command, and that of this about 28 million horse power is all that could be developed without unreasonable expense. Today we use 49 million horse power alone, generated mostly from coal to supply our engines, factories, mines and cities. If every bit of electrical energy possible from our streams were used to heat our houses, a few simple calculations show that it would heat about 4 per cent only of the homes in this country.

To add to this difficulty 79 per cent of our undeveloped water power is on or west of the Rocky Mountains, far removed from our centers of population.

Our water power as a whole is comparable to the water power of other nations and parts of the globe having similar area.

The logical conclusion must be, therefore, that valuable as are water powers for local development of power and with consequent saving of our fuel resources, they can never replace the great and growing demand for power that must be satisfied, if at all, through the coal resource.

5. Vegetable Fuel Resources

No account of the world's fuel resources would be complete without a reference to the possibilities of wood and other vegetable products as a possible source of fuel, either by burning direct as with wood, or that obtained through fermentation and distillation as the production of the alcohols from potatoes and grains. These forms of fuel share with water power the advantage that they are replaceable; that is, new crops may be grown or new rains replenish the supply, in contrast to the irreplaceable mineral fuels.

Wood has been and will long continue to be a fuel of local importance. It takes roughly two cords of wood to equal a ton of coal. In other words, more than a billion cords of wood would be necessary each year to replace our present coal supply. Since an acre of woodland will produce somewhat less than a cord of wood per year, it would take roughly two thirds the land area of the United States devoted to scientific forestry to supply wood equal to our present coal demand. The present yearly cut of timber in the United States for all purposes is 22½ billion cubic feet. Translated into cords and assuming it all to be used as fuel, it would replace only one fifth of our yearly production of coal. Thus the impossibility of considering in any way the substitution of coal by wood. As long ago as 1817, when our Pennsylvania iron industry was in its infancy, the Pittsburgh Chamber of Commerce, becoming alarmed because the forests had disappeared through being made into charcoal for the iron furnaces, sent a commissioner to England to investigate the report that a product of coal could be used for the same purpose.

Much the same story as for wood can be told for the grains. Not long ago it was established in Iowa that as a fuel corn at 10 cents per bushel was equal to coal at $5.11 per ton; in other words, coal would have to be $40.00 per ton to consider using corn as a substitute at the present price of corn. And again, the future is going to see our farm products needed for food more than for fuel.

In general, while all of these possible vegetable substitutes for coal and petroleum products are interesting in a local way, they can never replace the

enormous tonnages of the mineral fuels that are needed today for our modern industrial life.

RÉSUMÉ

Coal is and must continue to be the foundation of our industrial civilization and the basis of our organized life. It is a non-replaceable asset whose supply has been bounded by a term of years comparable to our Christian era. For all we know today there is no substitute to furnish the vast quantities of power increasingly demanded. Common decency for the coming generations demands a rational program of conservation, production and utilization.

Petroleum is a supplementary fuel only, whose supply and cost is, if measured over a generation, more uncertain than that of coal. Higher prices and more restricted uses are forecasted within a few years by the evidence now at hand. Water power is valuable but inadequate.

Vegetable products fuels, although possible for many minor uses, fail utterly to meet the need when figured on a comparable tonnage or quantity basis.

Coal, then, is the basic fuel of the future, and the problems of its production, distribution and utilization are problems that must be met and solved if you and I and our posterity are to continue in our creature comforts and life of an industrial civilization.

Giant Power and Coal

By Morris Llewellyn Cooke
Director, Giant Power Survey, Commonwealth of Pennsylvania

GIANT POWER signifies not only a mammoth scale but a widely integrated electrical service and one benefiting largely from certain fundamental economies such as by-product recovery at present, either not practiced at all or practiced only at isolated points. Giant Power also implies definite social ends such as furnishing current generally to the small user, including both the farmer and the manufacturer removed from the congested centers of population, and this at rates making such use economically feasible.

Governor Pinchot and the legislature, which under his leadership authorized the appointment of a Giant Power Survey Board, hope through its activities and reports to make a substantial contribution to the conservation of national resources. For while we contend that electrical technology has reached the point where electrical power can be brought into almost universal use, we just as insistently demand that the easily preventable wastes resulting from our present methods of generating and distributing electrical current shall cease.

Economy of Water-Power Developments

Pennsylvania is primarily interested in this new phase of the conservation movement because of the desire to safeguard her vast coal deposits. For while Pennsylvania is supplying today practically 40 per cent of the coal required for the nation's use, our deposits are far from inexhaustible. In fact, the end of our coal is in sight—well within 100 years—unless we can put a stop to some of the more flagrant wastes especially in its use for power purposes. Other coal-producing states—such as West Virginia and Illinois—have relatively even more to gain because of the larger deposits yet remaining in the ground. In recent years we have come to appreciate the economy of water-power developments. It is not yet understood, however, that few water powers can be effectively utilized except as adjuncts to coal-burning power stations. Therefore, with each step in the integration of electrical facilities, a further inducement to water-power development is afforded, a further conservation of natural resources made possible.

As Governor Pinchot has pointed out, there is one basic development that paves the way to a more or less immediate realization of the new electrical day. As Pennsylvania is not much more than 300 miles wide from east to west, the distance factor in electrical transmission has for us been all but eliminated. The losses in passing current from one end of the state to the other are negligible in view of the economics. We are now in a position to generate current either by water power or steam power wherever it can be manufactured with the least expenditure of effort and material and then to transmit it to the point of use. This one fact requires an absolutely new synthesis of our energy resources and of our energy requirements. It makes feasible the concept of the pool of power—a far-flung network of electrical facilities into which energy in the form of current can be poured from whatever the source and out of which energy in the form of current can be

taken to meet any need. This wide-reaching geographical distribution means the utilization of the supply for highly diversified uses and this involves the economies that go with an even demand.

COAL PRODUCTION AND USE

Before proceeding to an examination of some of the bearings of Giant Power on coal, it will be well to have before us a few statistics as to the production and use of coal. The United States produced in 1922

422,268,099 tons of Bituminous coal
54,683,022 " " Anthracite coal

476,951,121 " Total

This was a year of rather low activity, for in the present year, up to October 20, there was produced

445,801,000 tons of Bituminous coal
77,343,000 " " Anthracite coal

523,144,000 " Total

Of the 1922 total, there was actually loaded for shipment away from the mines

383,677,407 tons of Bituminous coal
46,003,699 " " Anthracite coal

429,680,106 " Total

Thus there was shipped away about 90 per cent of that raised to the surface. The balance is largely accounted for by coal coked at the mines and local sales.

In 1922, Pennsylvania raised 113,148,308 tons bituminous coal, or 26.8 per cent of that raised in the United States.

In 1922, Pennsylvania raised 54,683,022 tons anthracite coal, or 100 per cent of that raised in the United States.

In 1922, Pennsylvania raised 167,831,330 tons total coal, or 35.1 per cent of that raised in the United States.

Of the amount of bituminous coal raised from Pennsylvania mines, reverting to the latest available Government figures, those of 1918, 40 per cent was used in the state (of which a little less than one half was shipped away from mines), 18 per cent transferred to railroads for railroad use, 6 per cent to New York State, 3 per cent to New Jersey and 4.5 per cent to New England. The balance went to tidewater for export, for bunker fuel, or to the western states principally by way of the Great Lakes.

In 1918 the total bituminous coal used in Pennsylvania was 79,893,062 tons, while New York State used 20,467,028 tons and New England 20,835,000 tons. Of the bituminous coal reported in 1918 as consumed in New York State, 11,500,000 tons or 55 per cent of their total supply came directly from Pennsylvania mines. Of that used in Pennsylvania about 32,000,000 was coked at the mines, leaving 47,000,000 tons used as coal for industrial, railroad and domestic purposes.

PART OF GIANT POWER PROGRAM

In order to visualize what may prove to be the influence of Giant Power on coal, let me suggest quite tentatively a few of the planks in the Giant Power program—without at this time pausing to present supporting data.

1. *Large-sized stations*—say not smaller than 650,000 H.P.;
2. *located at or near the mines* and supplying current to
3. *a trunk system of transmission lines* reaching 220,000 volts with large capacity to carry power long distances
4. *An integrated transmission and distribution system*
5. *By-product recovery* in some form
6. *The furnishing of current to the rural population*
7. *Trunk line railroad electrification*
8. *Radical reductions in rates* especially to the smaller consumer and at least in proportion to the reduction in costs.

INTERSTATE CONTROL

We can frankly admit that this program—actually now in process of being realized—while it affords the only route to the cheapest power and therefore to the most widespread use of power—also creates a monopoly and a monopoly of tremendous import. This will be true, however, whether under public ownership or under regulated private ownership. It is obvious that the control in the public interest of such developments under private ownership implies a load on our system of state regulation of public utilities which it has never yet been required to carry.

As complete integration into a single inter-connected electrical system is approached in the northeastern United States, it is probable that state regulation, as we have known it, will become increasingly ineffective.

Inasmuch as Giant Power cannot know state lines, there are reasons for anticipating regulation by pact between two or more states in order to provide regulatory areas corresponding with natural pools of power. There appears to be little reason for urging Federal regulation. Therefore, control by areas to be determined largely by technical considerations, such as the effective transmission distance, may prove to be the answer.

RELATIVE IMPORTANCE OF STEAM AND WATER POWER

Any consideration of the feasibility of such an interstate pact, mutually binding on Pennsylvania and any of her sister states, inevitably directs attention to the relative importance of steam power and water power as factors in our future energy supply. We can admit gross negligence in our failure to develop our national heritage of water power and yet fall into grave error if we fail at the same time to point out what appears to be the lesser importance attaching to water power as compared with steam power. In fact, as time goes on and the community learns to use mechanical power more freely, this disparity will become greater.

Only figures can visualize this situation. And yet one uses figures with every reservation in stating a problem involving so many variables. In the northeastern United States the principal water powers are found in New York, Pennsylvania and New England. The situation within this area can be approximately expressed as indicated on the following page.

AVAILABLE WATER POWER IN UNITED STATES

Thus it will be seen that the only undeveloped water powers which can at all vitally affect the power situation in this district are to be found in New York State and have to do principally with the proposed developments of the Niagara and St. Lawrence Rivers.

The present development of the Niagara River is limited by treaty to 20,000 cubic feet per second on the American side; and practically the whole permitted flow is being utilized, but with considerably less than maximum efficiency.

The maximum available head at the Falls from the head of the rapids to the level of Lake Ontario is 310 feet. If we consider 305 feet, which is the head actually achieved by the publicly owned development on the Canadian side, as possibly available, and 80 per cent of potential energy as deliverable at the station outlet, the maximum power possible would be about 600,000 H.P. Under present installations, probably not one half of the total head is utilized, so that actual present power developed on the American side is not in excess of 270,000 H.P.

Installed steam power:		
New York		3,750,000 H.P.
New England		3,500,000 H.P.
Pennsylvania		5,500,000 H.P.
		12,750,000 H.P.
Developed water power:		
New York		1,250,000 H.P.
New England		1,300,000 H.P.
Pennsylvania		150,000 H.P.
		2,700,000 H.P.
Undeveloped water power:		
New York		4,000,000 H.P.
Niagara	2,000,000 H.P.	
St. Lawrence	800,000 H.P.	
Delaware	150,000 H.P.	
Interior Rivers	1,050,000 H.P.	
	4,000,000 H.P.	
New England		400,000 H.P.
Pennsylvania		1,000,000 H.P.
		5,400,000 H.P.

If the entire flow of the Falls could be utilized in the same divergence proportion between the United States and Canada as now, the United States could utilize, out of a total natural mean flow of 212,000 cubic feet per second, 75,714 cubic feet per second, which would give a maximum efficiently developed power of not to exceed 2,100,000 H.P.

The St. Lawrence River from the end of Lake Ontario to the limit of United States boundary may yield a maximum of 1,600,000 H.P. If one half is assigned to the United States then 800,000 H.P. would be available on the American side.

DESPITE WATER POWER NEW YORK STATE IS INCREASINGLY DEPENDENT ON COAL

In New York State in 1922, the Public Utilities generating electricity by steam used approximately 4,600,000 tons coal, all of which was imported from Pennsylvania, Ohio, Maryland and West Virginia. This coal generated nearly 6 billion horse-power hours, from an approximate capacity (ignoring standby or surplus) on a 40 per cent load factor of 1,675,000 H.P.

This means that the complete development of the St. Lawrence River project could reduce the coal required to be brought into New York State for the present use of the electric utilities alone by only about one half. To eliminate the need of importing the balance of the coal required merely for these electric utilities, the divergence of the waters of Niagara Falls would have to be increased from the present allowance of 26.4 per cent to 65 per cent. If this additional power were utilized with the present partial head, it would take practically the entire flow of the Falls.

Thus it will be seen that if New York State today had all her water powers—both those available and at all likely to become available—fully developed, she would still be dependent on the states to the south of her for an amount of coal representing a very

considerable part of her energy supply. With the increase in the use of current for domestic, agricultural and industrial purposes, New York's dependence on coal will constantly become greater. Of course what is true of New York is even more true of New England, because her water powers developed and to be developed represent a much smaller proportion of the total present use of power. In this connection it is interesting to note that the Ontario Hydro Electric Commission, now operating almost exclusively with current supplied from Niagara and other smaller water powers, foresees the complete exhaustion of hydro power by 1932. After that year it is expected further developments will be dependent on current derived from coal-burning stations.

NECESSITY FOR STANDARDS OF FUEL ECONOMY

Now to haul the needed coal to New York State rather than to transmit the current involves not only a heavy burden of additional fuel for transport purposes, but almost inevitably means that after the coal reaches New York State it is burned in a multitude of plants widely separated and for the most part inefficient—requiring, as in 1922, nearly three pounds of coal per horse-power hour. The alternative is to be connected up to a suitable number of Giant Power fuel-consuming plants practicing by-product recovery located in or near the coal fields in Pennsylvania or West Virginia and selling energy on the basis of using something less than one and one-half pounds of coal per horse-power hour. Guy E. Tripp, Chairman of the Westinghouse Board, was recently quoted as saying:

> A 1,000 H.P. generator such as is used for service in a small town requires about four pounds of coal to produce a horse power for one hour. But a 50,000 H.P. generator can produce the same amount of power for less than one and one-half pounds of coal.

Will New York continue to haul coal to wastefully burn it, rather than tie in to the Northeastern system in full coöperation with all sources of economical power contributing to the same pool of power?

The recent overwhelming defeat at the polls of the Ferris Amendment to the New York State Constitution suggests that the voters of New York are not indifferent as to the method by which Giant Power is to be obtained. Nevertheless, it appears to be an ultimate economic necessity for the Empire State.

The great differences recorded as between different electric stations in the matter of the efficient use of coal suggests that the day cannot be far distant when our state commissions will find it advisable to set up standards of fuel economy. As the fuel item represents roughly three-quarters and over of the whole cost of making current the inducements to such regulation are obvious.

SUGGESTED ELECTRIFICATION OF RAILROADS

Nowhere are the effects of large-scale electrical development likely to be more marked than on our transportation systems. And perhaps the largest single factor in this will be the diminishing of the coal load. The railroads themselves now use 30 per cent of our coal production, and one third of their freight load is coal with most of the cars hauled back empty. Of course on some of our Pennsylvania roads this percentage is much higher. Baum has estimated that the cost of maintenance of electric locomotives will be about 50-60 per cent of that of steam locomotives and he argues that, since the railways of the United States use 175,-

000,000 tons of coal per year, complete electrification might effect a saving of 100,000,000 tons a year.

Practically all our trunk line railroads are confronted with the necessity of materially increasing facilities if they are to keep pace with increased freight offerings. This disparity between tonnage offered to our railroads and their capacity to handle it expeditiously is likely to reach the critical point during the next boom period. The least expensive and most logical way out apparently lies in electrification, making possible the use of the more mobile electric engine and making it unnecessary for every train "to carry its power supply on its back," as Bruere has expressed it.

Further aid will come as energy is transmitted everywhere over wires through reductions in the coal freight load, thus making room for a larger volume of higher grade commodities. As Herbert Quick has pointed out, we Americans are attempting something absolutely new in nation building in that our whole social system is dependent on the free flow of a vast freight and passenger traffic over great distances—East and West, North and South. Our war-time experience gave indisputable proof that our present rail facilities may easily be taxed to the breaking point; and further, that more cars and more steam engines may easily make the situation worse. Electrical motive power in place of steam on the railroads and a community supplied with energy generated at or near the mines rather than by coal hauled over the railroads seems to be the answer.

UNIFIED POWER SYSTEM AN EFFICIENCY AND CONSERVATION MEASURE

Obviously this large-scale electrical development will vitally affect the way in which the mining of coal is carried on. Throughout this volume are references to the irregularity in the demand for coal and the consequent speculative character of the industry and intermittency of employment. A Giant Power system may easily make an energy budget both by states and regions possible for the first time. Within reasonable limits a unified power system will enable us to determine in advance what the demand for power is going to be. It is obvious that such a budget would also enable us to stabilize production and employment at the mines.

The anthracite industry seems to offer a rough illustration of this fact. Up to the early years of this century, production and employment in the anthracite fields were notoriously more intermittent and irregular than present production in the bituminous fields. With the development of the anthracite monopoly, the operators were able to determine in advance what the minimum or firm demand for anthracite was going to be. Once they made this determination they limited anthracite production to approximately 80,000,000 tons a year, of which over 70,000,000 tons went into the market. As a result of this crude budget, production and employment in the anthracite fields have steadily risen from the neighborhood of an average of approximately 200 days a year to approximately 270 days a year.

The great aim of Giant Power is not so much to increase the rate at which we mine coal, but rather to increase the efficiency of the transformation of coal into power. The importance, therefore, of an energy budget, which seems possible only under the conditions of a unified Giant Power system, from the point of view of energy conservation as well as of stabilizing employment in the mines, is clear. All this seems to emphasize the importance of the storage of coal—but for power purposes rather

of storage at or near the mines as contrasted with storage at points of distribution or storage in the consumers' bins. The consumption of coal at the mines for the production of power will have an influence on the quality of the coal prepared for shipment. The ability to use lower grades of fuel in the Giant Power plants will provide a use for such fuel without attempting to pass it out to the public, the practice of which is so apparent whenever a shortage of coal in local markets occurs.

WAYS AND MEANS TOWARDS UNIFICATION

We can concede that unification must be the central theme in the energy supply of the future—even of the immediate future—and yet see a number of routes by which it may be brought about. It is perhaps fortunate not only for Pennsylvania, but for the nation, that we have right here in this state all the elements that must be woven into the fabric of a Giant Power system—water powers, vast coal deposits within workable access to adequate condensing waters, large centers of population removed some distance from the water and coal sources of energy, great areas of prosperous farming territory with a fairly high average number of farms per mile of road to be transversed with electrical lines, and above all, an intensive and diversified industrial activity that will support a large-scale electrical development. A reasonably full application of the principles of Giant Power appears to be just below the horizon. Once applied to Pennsylvania the broader logic of the application to a territory not bounded by state lines will be clear.

Fuel Wastes: Causes, Effects, Remedies

By R. H. Fernald
Professor of Dynamical Engineering, University of Pennsylvania

OUR basic causes of fuel wastes are directly or indirectly traceable to an overabundant supply of natural resources. The burning of sawmill refuse and edgings day and night throughout the year, the discarding with the ashes of 25 per cent to 33 per cent of the original coal fired, the throwing away of portions of the oil supply as a drug on the market, the blowing of natural gas into the air as a nuisance in oil production, and the reckless burning in the open gas fields of billions of cubic feet are all well within our present recollection.

The worthless edgings of two generations ago now bring from $10 to $15 a cord. The $1 and $1.50 coal of the same period, too cheap at that time to warrant economy in its use, now sells for from $5 to $15 a ton and the annoying gas and useless oil products, now worth millions annually, are so nearly exhausted that great anxiety is felt as to the possibility of substitutes to meet the ever increasing industrial and domestic demand.

Faulty mining methods and the low cost of coal have, in years past, resulted in a wastage of a ton and a half for every ton placed on the commercial market. Our general procedure has resulted in the flooding and caving of mines from which only the better grades of coal have been taken and the breaking up of the seams, thus making the removal of the coal by future generations not only expensive but so dangerous as to be prohibitive. Improved methods of operation and the increased value of the product have, however, reduced the average wastage to approximately one-half ton for each ton sold. Even if only one-half ton of coal is lost for each ton marketed, this average for a single year would, if piled as ordinarily piled in bins or bunkers, be equivalent to filling Franklin Field with a column five miles high.

When natural gas was first used, tremendous quantities were lost through inability to cope with high pressures when the reservoirs were tapped. Vast quantities have been lost through the indifference of those interested in securing petroleum, but not concerned about natural gas, and the gas from the wells has been purged in order to get the oil. As great as have been the losses from these two sources, the really appalling loss has resulted from burning wells. Hundreds of millions of cubic feet have thus been destroyed daily. For twenty years one well blew forth wasted gas, the aggregate value of which was $3,000,000. As late as 1913, in the Oklahoma field alone, the yearly waste amounted to 100,000,000,000 cubic feet, and not many years ago, Dr. I. C. White, in speaking of the conditions in West Virginia, said:

> At this very minute our unrivaled fuel is passing into the air from uncontrolled gas wells, from oil wells, from giant flambeaus, from leaking pipe lines, and the many other methods of waste at the rate of not less than 1,000,000,000 cubic feet daily, and probably more.

For years the waste was equal to the amount utilized, and frequently reached the equivalent of the loss annually of over 20,000,000 tons of coal, or the destruction of a 40-ton car of coal every

minute of every 24-hour day for the year.

This ruthless waste of our wonderful fuel resources, the unrestricted use of our better grade fuels, and the neglect to use fuels that should be of real commercial value are phases of our national extravagances that are little short of appalling.

WHO USES COAL?

Who uses all the coal we are producing? Where does it go? The industrial steam trade takes approximately 35 per cent, indicated by the height of the column at the left (Fig. 1). The railroads come next, using 24 per cent. The domestic and small steam trade use 17 per cent; the manufacturing of coke, 13 per cent; bunker fuel and exported, 6 per cent; power, heat and light at the mines, 4 per cent; manufactured into coal gas, 1 per cent.

We will now discuss the use of this fuel by these several agencies—industrial steam trade, railroads, etc. Let us assume a 20-car train, 50 tons to a car, making a train of 1,000 tons of coal. Starting this train from the mine, we will first drop 40 tons at the mine, or four fifths of a car; we will assume the rest of the car to go on with the train. We will assume that the railroads then take their portion, which is 240 tons, or 24 per cent, as shown in Figure 2. Then we will go on to the industrial centers and drop for the industrial steam trade its 35 per cent or 350 tons, as indicated; then the domestic and small steam trade, 170 tons; then for the manufacture of coke, 13 per cent or 130 tons; for the manufacture of coal gas, 10 tons; for steamship bunkers and exportation, 60 tons, stripping the train to its locomotive and tender. We will next give attention to these several fuel users to determine what might be done if, instead of using coal as we do at the present time, we applied a little sound engineering and utilized our fuel efficiently.

REASONABLE SAVINGS VERSUS PRESENT EXTRAVAGANT METHODS OF USE

Without going into an elaborate presentation of detailed statistics, a brief outline of the coal savings which should result from more effective and more efficient methods of utilization are approximately as follows:

1. At the Mines

One ton of anthracite is consumed at the mines for every 8 or 9 tons produced. Silt, slush and culm, making up 8 or 10 per cent of the coal mined, are wasted by diversion to streams, back filling abandoned mines or stored in culm piles. Their use for power, heat and light at the mines would release to the trade 7 or 8 million tons of anthracite each year. Four hundred million tons of culm were produced in the last 100 years; 200 million tons, or half this culm, have been wasted by dumping into streams, back filling, etc. There are still available above ground approximately 200 million tons. The Super Power Survey estimates a possible 75 per cent saving in the anthracite mining region, if we supply that region by efficient central station power. The saving at the bituminous mines would be considerably less, but is still large. It is my purpose, however, in estimating savings, to keep well below the savings estimated by the Super Power Survey. Our estimated loss, then, for all mines, due to careless wasteful methods now in vogue, not including the mining loss, is easily 30 per cent.

2. By the Railroads

Steam locomotives require two or three times the coal consumption of the electric locomotive with present-

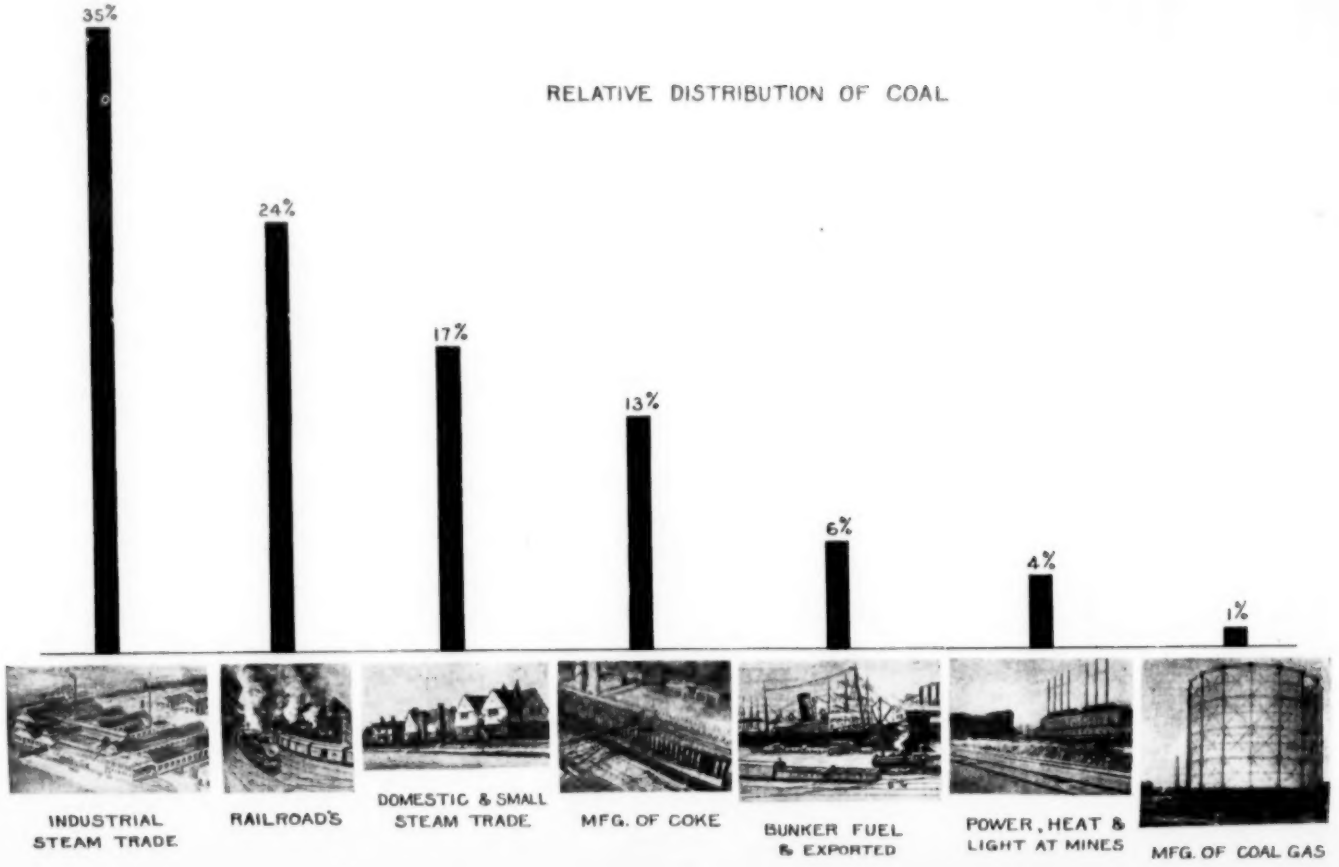


Fig. 1

RELATIVE DISTRIBUTION OF COAL

RELATIVE DISTRIBUTION OF COAL
1000 TONS - 20-50 TON CARS - FROM MINE
USED TODAY
40 TONS
TO MINES
240 TONS
TO RAILROADS
350 TONS
TO INDUSTRIAL STEAM TRADE
170 TONS
TO DOMESTIC & SMALL STEAM TRADE
130 TONS
TO MFG. OF COKE
10 TONS
TO MFG. COAL GAS
60 TONS
TO STEAMSHIP BUNKERS & EXPORTED

FIG. 2.

day central station efficiencies. With the steadily improving efficiencies of the larger stations even better economy will result. The electrification of a large portion of the railway mileage of this country is entirely feasible and will undoubtedly be an accomplished fact in the not distant future. It seems entirely within reason to assume that, with such electrification and with up-to-date consumption methods for those steam locomotives then in use, at least one half of the fuel used by the railroads today can be saved.

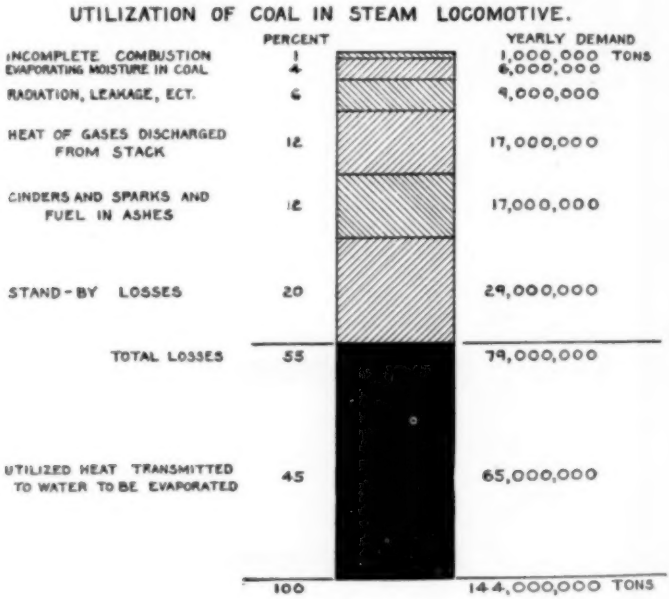


FIG. 3.

Let us glance for a moment at the utilization of coal by the steam locomotive today (Fig. 3). Out of 144 million tons of coal used by the steam locomotives in a single year the losses or wastages (a large portion of which could be prevented) through incomplete combustion are 1 per cent, amounting to over a million tons a year; evaporating the moisture in the coal itself, 4 per cent, making 6 million tons a year required for that purpose; radiation, leakage, etc., 6 per cent or 9 million tons; heat in the gases discharged from the stacks, 17 million tons; cinders and sparks distributed along the roadway, 12 per cent or 17 million tons; standby losses—just locomotives standby—by waiting to do work, with steam up and fires going—29 million tons of coal a year. Total losses, 79 million tons. Utilized in heat transmitted in evaporating water, 45 per cent or 65 million tons. Out of 144 million tons consumed we have a loss of 79 million—not all of which could be avoided—but we are safe in saying that probably 50 per cent of this total coal consumption could be saved through processes of electrification and through better utilization of both fuel and equipment.

3. By the Industries

The heat losses in the average industrial plant are large. In the or-

RELATIVE THERMAL EFFICIENCIES.

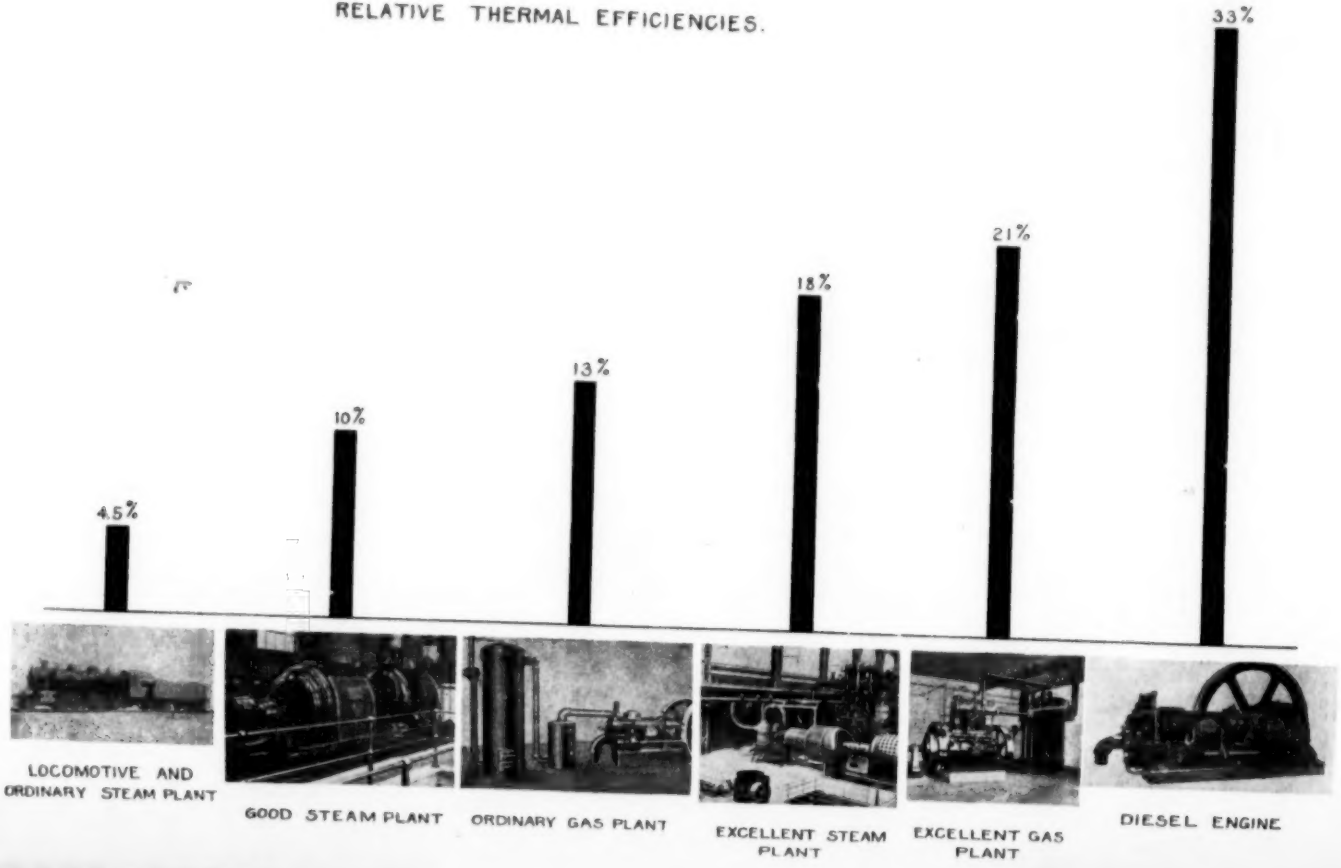


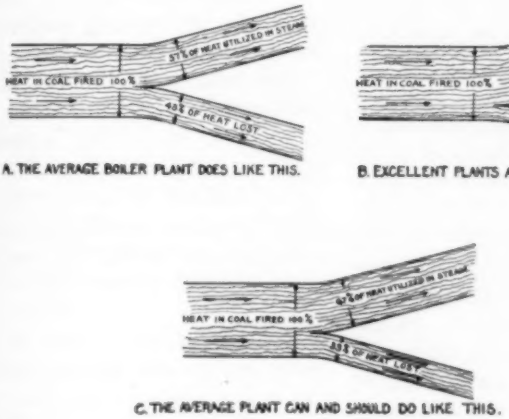
FIG. 4

dinary steam plant less than 5 per cent of the heat energy in the fuel in the furnace is realized in the form of useful energy at the machine (Fig. 4). Good steam plants do twice as well and the highest grade plants possibly deliver four times the energy in the form of useful work. High grade gas plants will convert into useful form about 20 per cent more of the heat energy in the fuel than the highest grade steam plant, and the Diesel oil engine is successful in utilizing nearly 100 per cent more of the useful energy in the fuel than the best known steam plant of today. Even in central stations, it is estimated that with a somewhat careful adjustment of operating conditions the efficiencies can be raised to a point that will enable a saving of nearly one third of the present fuel demand of these stations. In manufacturing industries, after careful consideration of the heating and process demands of these plants, it is well within the range of daily operating possibilities to save not less than 20 per cent of the present coal consumption, which means a reduction of the coal demand from 10 pounds per horse power hour to 8 pounds.

Uncovered pipes are a source of extravagant waste. Fifty feet of 5-inch uncovered pipe will call for an additional 20 tons of coal annually to take care of the heat losses due to improper protection of this pipe line.

Briefly, prevailing boiler efficiencies are approximately as follows: The average boiler plant shows an efficiency of 57 per cent; that is, the heat transferred from the coal to the water for evaporating steam, 57 per cent; loss, 43 per cent. Excellent plants are getting 80 per cent into the steam, losing 20 per cent. These ordinary plants can, by a little good engineering skill and care, be easily brought up to the point of transferring 67 per cent of the heat into the steam, a wastage of 33 per cent instead of 43 (Fig. 5).

BOILER EFFICIENCIES.


57% OF HEAT UTILIZED IN STEAM
HEAT IN COAL FIRED 100%
43% OF HEAT LOST
80% OF HEAT UTILIZED IN STEAM
HEAT IN COAL FIRED 100%
20% OF HEAT LOST
67% OF HEAT UTILIZED IN STEAM
HEAT IN COAL FIRED 100%
33% OF HEAT LOST

A. THE AVERAGE BOILER PLANT DOES LIKE THIS.

B. EXCELLENT PLANTS ARE DOING LIKE THIS.

C. THE AVERAGE PLANT CAN AND SHOULD DO LIKE THIS.

FIG. 5.

4. *In Domestic Plants*

Attention has just been called to the boiler efficiencies that prevail in average industrial plants. Even the poor-

est of these is well above the usual efficiencies obtained in the manipulation of heaters in private homes. These household heaters are, as a rule, sadly neglected. In many instances, the soot and dust are not cleaned from the heating surface more than twice a year, which makes the rate of heat transmission from the hot gases to the water or air very low.

Instead of the average efficiency of 57 per cent of the small industrial plant, it is probable that the majority of household heaters do not show an efficiency above 45 per cent. This means that in the average home 10 tons of coal are required to do the work which might easily be done by 8 if care were taken to keep the heater clean and air leaks sealed. Another source of serious loss in the handling of the ordinary house-heating plant is due to carelessness in throwing away good carbon with the ashes.

Domestic ashes frequently contain 50 per cent burnable coal. So common is this careless practice that only a few years ago, according to report, in one city alone the board of education was able to save $50,000 for the year by checking this extravagant procedure.

Lack of uniform temperature in our homes and lack of proper humidity are responsible for additional wastes of no mean proportions.

To this list of waste causes may be added poor house construction, especially during the past few years, which is responsible for the needless use of many tons of fuel in every community. In the neighborhood of 100 million tons of coal are used annually in the homes, churches and schools of this country, or one ton of coal per person.

If we would all follow correct, simple instructions for operating our household furnaces, heating boilers and stoves, a saving of from 10 to 15 per cent of the fuel could easily be made. Some engineers think that the saving could be 25 per cent. A marked fuel saving would result from a greater development of central or community heating plants.

THE DOMESTIC HEATING PROBLEM

Events in the last few years, especially in the last few months, have occasioned so much anxiety among the household users of anthracite that I believe it proper to diverge from the main theme under discussion long enough to offer a few suggestions regarding valuable substitutes for anthracite for heating and other household demands.

Anthracite is a luxury. It combines refinement with limitation of supply. The production cost is roughly twice that of bituminous coal. The mines are confined to a region of heavy freight rates. Anthracite yields no by-products to modify its cost. There is only a small proportion of the supply left.

Those of us living in the East perhaps do not realize that of all coal used for domestic purposes, anthracite represents not over 40 per cent. In other words, the majority of homes in this country are heated by bituminous coal. It is, therefore, pertinent to call attention to the fact that instead of the usual grades of anthracite demanded for this purpose, the following substitutes may be used advantageously:

a. Small sizes of anthracite

The smaller sizes of anthracite, usually known as the steam sizes, representing about 30 per cent of the total anthracite marketed, can be used effectively if the proper grates are installed and sufficient draft is supplied.

b. Coke

Coke is an excellent, clean, smokeless fuel, and is preferred to anthracite by some. It responds quickly to variations in draft. Coke fires require some attention but after the knack of burning has been learned burn very satisfactorily.

c. Bituminous coal

There is an abundant supply of bituminous coal widely distributed and it is relatively cheap. The general objection to it is its dirtiness. The low volatile or smokeless types found in central Pennsylvania and West Virginia, although not as clean as anthracite, can be burned with very little smoke. Their heat value is high and they produce comparatively little ash. The high volatile coals of Pennsylvania and central western districts require skill in firing to prevent smoke, but are efficient for heating purposes, after the method of firing has been learned, if proper care is taken to keep the furnace clean.

The majority of homes in the United States are heated by bituminous coal.

d. Briquets

Briquets are made from culm, slack, carbon residue from the manufacture of oil gas and sawdust. They are relatively clean and make an excellent fire if the briquets are of good quality. The price is often as high as for anthracite.

e. Oil

From the standpoint of heat value, oil is an excellent fuel and if the equipment installed for its use is of high grade gives excellent results and requires little attention. It is regarded as very desirable for cooking and hot water heating. Limitations due to the decreasing supply, high price, heavy commercial demand and lack of continuity of contract counteract to a great extent the advantages gained by its use.

f. Gas

Gas as a fuel possesses the majority of advantages and few disadvantages other than high cost. The ease of control, cleanliness and prompt response to changes in heat demand make it a very desirable fuel.

g. Electricity

Electricity for domestic purposes possesses every advantage with the one exception, high price. To what extent its use may be developed is problematical. Wyer, in a discussion of this subject in a recent bulletin of the Smithsonian Institution, reaches the following conclusion regarding electricity:

> Electricity for cooking and heating cannot solve the home fuel problem. It would take about six times as much coal to generate electric energy for house heating as would be required to use the coal direct in the home. If the 46 million horse power of undeveloped water powers in the United States were fully developed, and this without regard to whether it was good business to do so, this total hydro-electric energy could heat less than 4 per cent of our homes. The home heating problem must be solved by proper use of available fuels.

Although at present, it is not possible to avoid the use of bituminous coal in the raw state, this practice should be discouraged. The by-products should be extracted and only the coke or gas used for heating purposes.

As pointed out a few years ago by Gilbert and Pogue,

> It is not beyond the bounds of reason to foresee a condition whereby a householder, in place of his ton of anthracite which he now welcomes at $11, will receive a ton of smokeless coal without slate, a month's supply of cooking gas, 40 miles of motor

fuel, enough fertilizer to start a small garden, and tar sufficient to allay the dust in front of his house—all for less money than he now pays for inferior coal.

5. In Coke Making

One of the uses of coal is the manufacture of coke. Beehive ovens are very wasteful; no by-products are available; they fail to yield a minimum coke supply and also waste the by-products; they should be entirely eliminated. By-product ovens furnished only 50 per cent of the coke in 1918, but are now furnishing 80 per cent or more. The by-product ovens consume none of the coal, but break it up into five components—coke, gas, ammonia, benzol and tar. On the basis of present by-product methods this coke is not a good domestic fuel. A simpler process of by-product coke making, producing a non-cellular carbon residue and located near the points of civilization, should be developed.

6. In Coal Gas Manufacture

In the manufacture of coal gas the purpose is the manufacture of gas. There is not sufficient attempt to recover all the by-products; the recovery is only partial at best at the present time.

7. On Steamships

The next item is steamship bunker fuel. The installation of the latest and most efficient steam equipment and oil engines should result in at least 25 per cent saving in our steamship coal demand.

THE POSSIBLE SALVAGE

Let us go back to the 1,000-ton coal train on the assumptions that have been made in regard to possible savings. Let us see what we would have in the way of salvage if we but added a bit of good engineering to our present methods (Fig. 6).

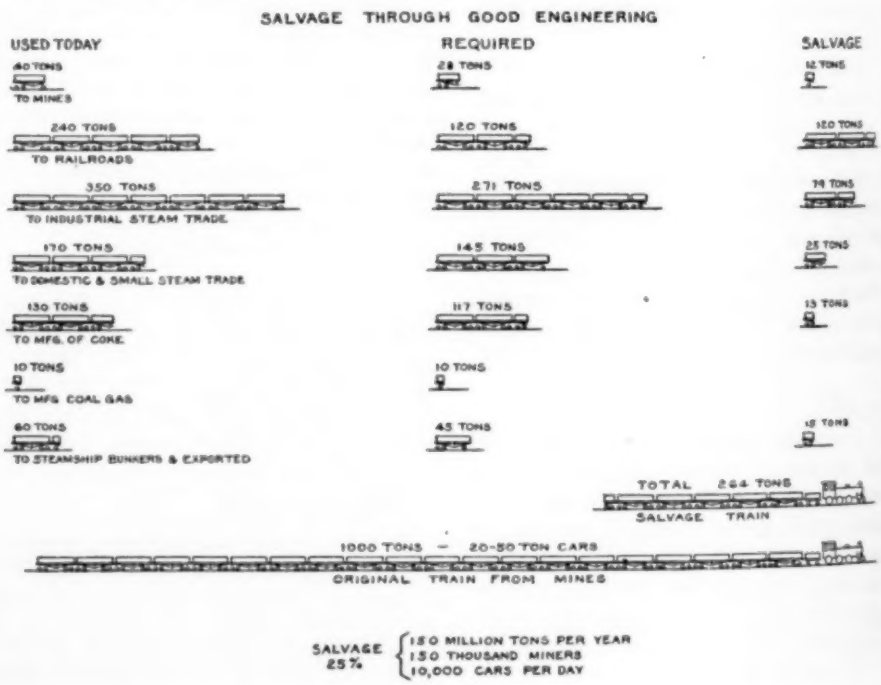



FIG. 6.

Today at the mines we use 40 tons. We ought easily to get along with 28 tons, or a saving of 12 tons. We use today for the railroads 240 tons out of our thousand-ton trainload. We ought to get along through electrification and better conditions of locomotive firing, etc., with 120 tons—a saving of 120 tons. Instead of 350 tons going into the industrial steam trade, 271 tons should serve, saving 79 tons. With the domestic and small steam trade our salvage is 25 tons; in the manufacture of coke, a small salvage only, 13 tons; manufacture of coal gas, practically no salvage; steamship bunker fuel, etc., 15 tons; making a total salvage through a little good engineering of 264 tons or 26.4 per cent. This portion of our train need never have left the mines. What does this salvage mean? If we could save 25 per cent by good engineering we would save the mining of 150 million tons of coal per year. We would release 150,000 miners now employed. We would release 10,000 freight cars per day—just through a little good engineering.

LIQUID FUELS

PETROLEUM

Having touched upon the coal situation—the solid fuels—let us turn our attention to oil—petroleum. Our annual production of petroleum is still approximately two thirds of the production of the world. Our rate of increase in oil consumption is much like that of our coal consumption. Our 1917 consumption was 344 million barrels. The 400 million barrel mark has now been passed.

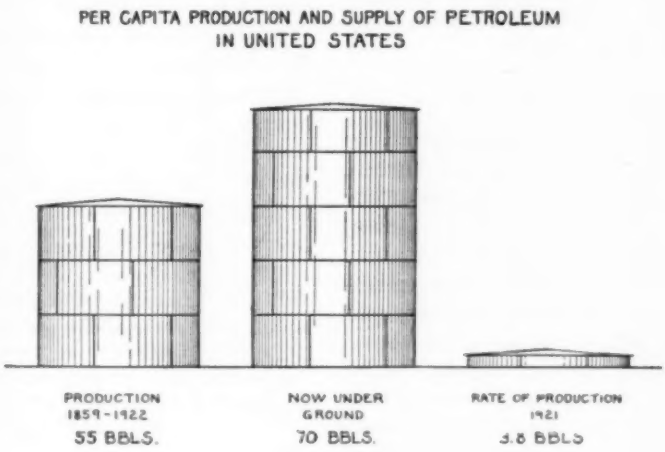


FIG. 7.

The per capita production of petroleum from 1859 to 1922 was 55 barrels. We still have under ground 70 barrels per person. In 1921 our consumption was at the rate of 3.8 barrels. In 1922 it went up to over 4 barrels per person. As nearly as the Geological Survey can estimate, our supply of available petroleum at the present rate of production cannot last over fifteen years (Fig. 7). The annual wastage of oil by seepage, leakage and fire, is large.

On the 4th of July, 1908, the greatest oil well of the world was struck at San Geronimo. When struck, the oil gushed so rap-

idly that, before the fire in the boiler room could be extinguished, the flowing oil reached it and burst into a mass of flame which for two months burned 60,000 to 75,000 barrels of oil per day, with a flame from 800 to 1,400 feet in height and 40 to 75 feet in width, making light enough to be seen by ships 100 miles at sea and to permit a newspaper to be read 17 miles away. After the loss of $3,000,000 the fire was put out, but the oil flowed so rapidly that it could not be carried away or put in tanks, and the owners saved their oil only by confining it in a reservoir one fourth of a mile long made by heaping up embankments to keep the oil from flowing away like water (J. Russel Smith).

PETROLEUM CONSUMPTION

The total yearly consumption of petroleum is over 400 million barrels. Over 100 million barrels represent our gasoline consumption. The United States' present supply is from 7 to 10 billion barrels but, used at the present rate, without additional importations, this supply will, as pointed out above, be exhausted within fifteen years, which tells the story of our recent interest in the Near East. The world's reserve is estimated at 43 to 60 billion barrels. At the present rate of the world's consumption, this would be good for 100 years; with the increasing demand of the United States it is good for only one to three generations. It is estimated that England controls 75 per cent of the world's supply. Our reserve can be increased by the elimination of waste in production. An appreciable percentage is dissipated by seepage, evaporation and fire. On the average, less than 25 per cent of the petroleum underground reaches the pipe line.

The total oil run to the stills in 1919 (Fig. 8) was 407 million barrels, representing 100 per cent; 94 million barrels or 23 per cent went into gasoline production; 55 million barrels or 13 per cent into kerosene production; 182 million barrels or 45 per cent into gas and fuel oils; lubricants, 20 million barrels or 5 per cent; miscellaneous products, 40 million or 10 per cent. Losses, 16 million barrels or 4 per cent.

INDUSTRIAL AND STATIONARY PLANT USE OF OIL

In industrial furnaces, it is claimed that oil gives a hot flame and is easy to regulate, but it is a question whether gas, powdered fuel or electricity will not serve quite as well.

Powdered fuel is gaining in demand. Recent electric furnaces show high efficiency and remarkable performance. Scarce or high-priced coal causes the use of oil in stationary plants, but the use of oil in stationary steam plants is, in general, unjustifiable because:

(1) The supply is nearing exhaustion.
(2) Steam plants are inefficient in its use.
(3) The demand for lubricating oils and motor fuels should take precedence.
(4) While plants can operate without liquid fuel, all industry would come to a standstill without lubricants.
(5) Efficient injection engines are available.

THE MARINE USE OF OIL

All steam plants in ships are condensing. They are, therefore, more efficient than locomotives. The best, however, waste 82 per cent of the energy available in the fuel.

The main reason for oil burning is the labor saving effected. Coal firing requires waste of men. Under battle conditions men firing coal are taxed almost beyond endurance. With oil fuel the number of men is greatly reduced; also the labor of each. With steam equipment, oil burning, including labor, often costs more than coal burning.

The total cost of Diesel ships is more than that of steamships, but in general

DISTRIBUTION OF PETROLEUM IN 1919.

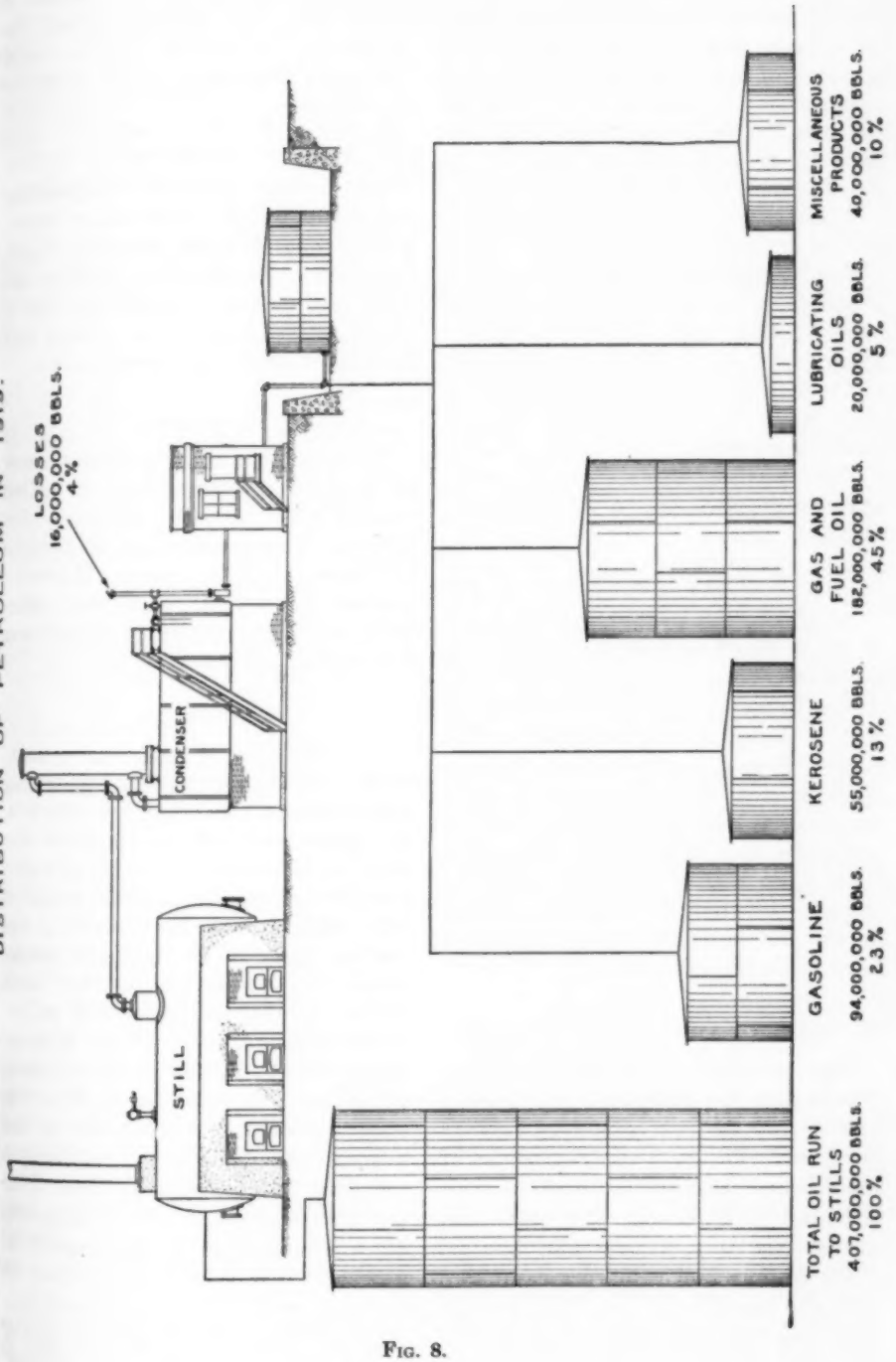

DISTRIBUTION OF PETROLEUM IN 1919.
LOSSES
16,000,000 BBLS.
4%
CONDENSER
STILL
TOTAL OIL RUN TO STILLS
407,000,000 BBLS.
100%
GASOLINE
94,000,000 BBLS.
23%
KEROSENE
55,000,000 BBLS.
13%
GAS AND FUEL OIL
182,000,000 BBLS.
45%
LUBRICATING OILS
20,000,000 BBLS.
5%
MISCELLANEOUS PRODUCTS
40,000,000 BBLS.
10%

FIG. 8.

the cost per ton of cargo space is less. The American merchant marine could have been largely Diesel ships, but pressure of war work at the time of construction prevented. These ships are now on hand and will probably have to be equipped to burn oil in order to man the ships.

There is no escape for a time from this oil demand.

The Bethlehem Steel Company's Diesel ship, in continuous service between Cuba and Sparrow's Point, Maryland, uses less than 37 per cent of the fuel oil consumed by her sister ship, with the most modern type of steam equipment.

The marine steam engine must apparently give way to the heavy oil engine.

RAILWAY USE OF OIL

It relieves the strain on the firemen. It is an excellent fuel, but the steam locomotive is extravagantly wasteful. There is no saving in the number of men required on the locomotive; the saving, if any, is at the fuel stations, roundhouses, etc. There is perhaps 10 per cent saving in handling cost at terminals, but locomotives utilize less than 5 per cent of the heat energy in the oil. Electrification of the railroads or the use of Diesel locomotives will have to be the solution.

SUMMARY OF THE USES OF FUEL OIL

The merchant marine, plus the Navy, plus the railroads, will require 120 to 130 million barrels of fuel oil per year. The real competition is in the relative claims of automotive gasoline and of fuel oil. The passenger automobile is a luxury and has no claim on our fuel resources compared with the commercial car. The Bureau of Mines estimates that 25 per cent of our fuel oil consumption should be saved through intelligent operation of plants and by proper firing. We should reduce wastage and the use of fuel oil in stationary plants as rapidly as possible.

GAS OIL

Oil is still used for carburetting water gas, but this is a relic of bygone days and of fish-tail burners. Eighteen million barrels were used for this purpose in 1920. While this use of oil is unjustifiable, it is better than burning it under stationary boilers.

KEROSENE

In 1919 there were 55 million barrels of kerosene produced and 23 million barrels, or 42 per cent exported. The increase in consumption of kerosene has been relatively small. It is not a general motor fuel. It is used principally for lighting in rural districts and for cooking purposes.

GASOLINE

According to the present estimate there are approximately 13 million motor cars in use. For the year 1920, 56 million barrels of gasoline were used for passenger cars and 52 million barrels for trucks, making a total of 108 million barrels. Where is this coming from? The maximum possible crude oil production in the United States is estimated as 450 million barrels as the peak in 1925. If we are going to keep up our gasoline demand at the present rate, we shall have to import tremendous quantities or find a substitute. Our kerosene supply is not sufficient in quantity, even if our engines could use it. We must develop an injection type of automotive engine, and this is not only predicted but is being tried out at the present time. At low loads this injection type of motor gives especially good economy.

GASOLINE SUBSTITUTES

Benzol and alcohol are the only adequate substitutes for gasoline to date. Benzol is derived from by-product coking plants and from gas manufacture. Two of these benzol-gasoline mixtures are locally known in Philadelphia as "C-4" and "Betholine." The average production of benzol is about 2 or 2½ gallons per ton of coal coked. The present benzol production in the United States is a million barrels a year—less than 1 per cent of the gasoline demand. If all the bituminous coal produced were coked, the benzol production would amount to only 24 million barrels, which is less than one fourth of the gasoline demand.

Alcohol is derived from agricultural products, from lumber, from paper mill waste and from coal via calcium carbide. The probable cost of alcohol ranges from 30 to 80 cents per gallon. If dependent upon the carbide process for the alcohol to meet the automotive demand, the major portion of all the water power of the country would be required for its production.

Artificial gas, through compression or after liquefaction, is a possible substitute for gasoline. It was used in England during the war without compression.

OIL SHALES

One of the probable future sources of supply of automotive fuel is found in the oil shale of the West. There is real hope in the use of shale oils, but their development must be on a large scale. Investigations indicate the following returns per ton of shale:

AVERAGE YIELD FROM ONE TON OF OIL SHALE

	SCOTLAND	COLORADO UTAH	USE
Oils, gallons	24	50	Subs for petroleum
Ammonium sulphate, lbs.	34	17–25	Fertilizer
Gas, cu. ft.	2,000	3,000	Fuel
Shale residue, lbs.	1,600	1,500	Brick making, road making, possible extraction of potash, etc.
	1910		1918
Cost of production	$2.00		$2.50–$3.50
Value of products	2.80		3.25– 3.75
Profit per ton of shale	$0.80		$0.75–$0.25

The figures from Scotland are practically authentic as the distillation processes have been carried on commercially for many years. Colorado-Utah figures are subject to modification as they do not represent production on a large scale.

GASEOUS FUELS

NATURAL GAS

The well-known advantages of gas make it perhaps the most desirable of all fuels. One third of the natural gas supply is used for domestic purposes, the remainder in industrial plants, under steam boilers, in metallurgical operations, in glass and pottery furnaces, cement kilns, and so on. In Ohio and in Pennsylvania the supply of natural gas has determined the location and development of special

industries such as the manufacture of clay products. The increase in price and exhaustion of supply have forced glass-making industries from Ohio and Pennsylvania to West Virginia and from Indiana to Oklahoma.

The natural gas supply was apparently unlimited. It was convenient and cheap, but it has been ruthlessly wasted and is still being so wasted in districts where its shortage is not seriously felt. We are now in a very serious predicament as a result of the short-sighted policies which have prevailed. Towns with 1,000 or 1,100 B.t.u. gas used in summer twice as much natural gas per domestic consumer as other towns supplied with manufactured gas. With the low price in general prevailing in the past, it has been impossible to make people conserve this resource or buy efficient equipment, as the total gas cost did not warrant it.

Simply because it cost so little it was extravagantly wasted. Wyer's investigations at Ohio State University give an idea of the wastage in burning natural gas. Fifteen per cent leakage in house piping and fixtures; 68 per cent due to wasteful combustion conditions in using gas at high pressure, burning gas after cooking is finished and before food is ready to be cooked, not turning gas down after boiling begins, useless radiation, etc., only 17 per cent actually utilized.

No hope apparently exists for any large additional supply to the present known gas wells. One of the latest flurries resulted in an expenditure of 30 million dollars from which only 6 million dollars was realized.

SUBSTITUTES FOR NATURAL GAS

(1) By-product coke ovens, 550 B.t.u. gas. Limitation: lack of demand for coke.

(2) By-product producer gas plants, 150 B.t.u. gas. Limitation: low heat value gas with high nitrogen content.

(3) A combination by-product coke oven plant and by-product producer gas plant, as used by the Saltley Gas Works, Birmingham, England.

(4) The production of producer gas by means of oxygen instead of air, getting rid of the excess nitrogen. Possible with a cheap oxygen supply, reducing the sizes of pipe distributing systems.

The average yield of by-products per ton of coal in the by-product coke oven and by-product producer gas plants are as follows:

	BY-PRODUCT COKE OVENS	BY-PRODUCT PRODUCER-GAS PLANT	REMARKS
Gas, cu. ft.	10,000 (550 B.t.u.)	135,000 (150 B.t.u.)	In coke ovens 57% of this gas is used in the coking process.
Ammonium sulphate, lbs.	22	80	
Tar, gals.	9	9	
Light oil, gals.	2.5	0	

SUMMARY

Summarizing briefly the things we have touched upon, we should see that definite steps are taken toward developing:

(1) Light and power for coal mines from central stations and giant power zone plants.

(2) Electrification of the railroads wherever possible.

(3) The use of coke and powdered

fuel for the necessary steam locomotives that are on the roads that cannot be electrified conveniently.

(4) Supply of power in large measure from giant power zone plants.

(5) Use of coke or gas in plants requiring steam for heating or for industrial purposes.

(6) Domestic heating from central plants wherever possible.

(7) Develop oil production from shale.

(8) Improved efficient automobile motors.

(9) Larger use of alcohol and benzol for automobiles.

(10) Elimination of use of oil for carburetting water gas.

(11) Elimination of oil as fuel in stationary plants and by the railroads.

(12) Introduction of internal combustion engines for marine purposes.

(13) Elimination of oil in industrial furnaces, such furnaces using powdered fuel and electricity.

(14) More extensive use of by-product coke oven gas and by-product producer gas as a substitute for the failing supply of natural gas.

Sound engineering will result in checking extravagant wastes of coal and oil, in reducing the railroad fuel transportation burden and in eliminating the disagreeable, expensive smoke nuisance—all through the proper use of instead of abuse of our fuels.

The Development of the Anthracite Combination

By Francis Walker
Chief Economist, Federal Trade Commission

AMONG the numerous industrial combinations in this country few have attracted more attention, or encountered more criticism, than that in the anthracite industry, while on account of the length of its existence, the peculiarities of its development and the urgency of constructive reformation in the coal industry it is of special importance at this time. Only by observing how it has developed is it likely that suitable measures will be devised to correct the abuses found. The way by which the industry strayed into these by-paths may be partly retraced, and may furnish a safer way out than to try some imaginary route of political dreamer or social fanatic.

An advocate of the mine workers recently described the anthracite combination in the following picturesque though somewhat fanciful terms:

> The anthracite industry has been organized into a huge combination, a monopoly very similar in structure to an octopus. Its head and body are a very small group of banking interests. Its entwining arms are seven railway systems which control at their extremities the anthracite mining operations of the country.[1]

Before entering into the detailed story of its development, it may be well to observe that up to the present time this combination has been quite as much a railroad combination as a mining combination. The desire to secure tonnage for railroad transportation was one of the chief motives of combination, as well as one of the chief causes of improvident coal mining activities. But even when this element is eliminated—and it seems to be now the least difficult problem in the case—there still remain the problems of concentrated ownership of the coal reserves for the remote future, of an industrial organization habituated to tacit collective action, and of a harassed consuming public confused by divided counsels and failing therefore to make its vast power felt by an unambiguous declaration of its will and an effective exertion of its economic strength.

In the history of the development of this combination three major periods have been unrolled up to the present time: (1) the early stages of the industry, in which, however, some of the later problems were clearly foreshadowed, (2) the period of combination by agreements and mergers, and (3) the present period during which numerous successful efforts have been made to undo certain elements of the combination. As to this last period there was naturally an extensive intermission as a result of the war. While this last movement of Government intervention has not yet finished its course, its momentum may be retarded or its direction diverted, if its aim and its goal are not properly understood.

It should be remembered also that this combination was a long time in building, and that it cannot be abolished in a day by ordinary political and legal methods, particularly as those who are striving to protect and prolong its existence are past masters of the game with many strong allies.

The anthracite mining region is a small coal field of less than 500 square

[1] Lauck: Before the United States Anthracite Coal Commission Summary, Analysis and Statement I, p. 37, 1920.

miles in the northeastern part of Pennsylvania. The anthracite region is divided into several districts, the Wyoming (or northern), the Lehigh (or eastern middle) and the Schuylkill (or western middle and southern), and each of these districts has its peculiarities as a mining region and its own distinctive history. It is the only important anthracite field in this country.

The original quantity of coal in the ground has been authoritatively estimated at about 19,350,000,000 tons. There remained in 1912 about 14,082,500,000 tons, which, with the prevailing mining methods and practices as to extraction (about 50–60 per cent), indicated that approximately 7,853,000,000 tons then remained to be won.[2] On this basis about 7 billion tons are probably still available.

The most important use of anthracite is for domestic consumption (though it was once an important metallurgical fuel), for which the familiar "domestic" or "prepared" sizes, such as egg, stove and nut, are chiefly sold. The small sizes are chiefly used for boiler fuel in competition with ordinary bituminous steam coal. In the early days only the domestic sizes were shipped to market, and the small sizes were thrown on dumps, but for many years these have commanded a high enough price in the market to pay a profit on shipment, more or less as a by-product.

EARLY HISTORY

Into the antiquarian history of the first discovery of anthracite and the beginnings of mining and traffic, it is not necessary to enter here.[3]

The usual statistics of the industry commence with the shipment of 365 tons to the Philadelphia market in 1820 by the Lehigh Coal & Navigation Company. This Company, like the other important pioneers in the anthracite industry, was both a miner and carrier of anthracite, and a canal was used, because the railroad had not then been developed. In the Wyoming field the first important enterprise was the Delaware & Hudson Canal Company, while in the Schuylkill field, it was the Schuylkill Canal. The Delaware & Hudson Canal conveyed the coal to New York, while the Schuylkill Canal and the canal of the Lehigh Coal & Navigation Company brought the coal to Philadelphia. Apparently for both the Delaware & Hudson and the Lehigh Coal & Navigation Companies the original motive and plan was to mine and market the coal, and the canals were built for that purpose. The Schuylkill Canal, however, was purely a transportation enterprise. With the introduction of the railroad soon after, the Delaware & Hudson Canal and the Lehigh Coal & Navigation Company combined the use of both instruments of transportation. The railroads furnished better opportunities for rival lines than canals, while the topography of the mining region, and various other factors of an engineering or commercial character, led to the greater use of railways and the gradual elimination of the canals.[4]

The Lehigh Valley Railroad and the Delaware, Lackawanna & Western Railroad first clearly emerge from smaller enterprises in coal mining and

[2] Griffith and Conner: *Our Anthracite Coal Supply and Its Conservation.* Original Communication 8th International Congress of Applied Chemistry, 1912, Vol. XXIV, p. 92.

[3] Cf. Jones: "The Anthracite Coal Combination," 1914; Roberts: "The Anthracite Coal Industry," 1901. "Evolution of the Anthracite Coal Trade;" "Mineral Industry," 1895, p. 141, *et seq.* (by Richard P. Rothwell); Report of the Committee of the Senate of Pennsylvania upon this subject of the Coal Trade, Harrisburg, 1834.

[4] Cf. Report of the Commission to investigate the increase in the cost of anthracite coal in the Commonwealth of Pennsylvania to the Governor and Legislature pursuant to Joint Resolution of June 15, 1915. (See pp. 40–3.)

transportation about the middle of the century. The Lackawanna Railroad tapped the Wyoming field and ran to New York. From the beginning this railroad company operated coal mines directly. The Lehigh Valley Railroad, after 1875, used subsidiary companies for mining coal. The Central Railroad of New Jersey formed close relations with the Lehigh Coal & Navigation Company, and became another route for the transportation of coal to New York Harbor. Later it acquired vast coal deposits. In the Schuylkill region the Philadelphia & Reading Railroad became a rival of the canal as a carrier about 1842, and before many years absorbed it. The Reading Road, like the canal, while engaged in the transportation of anthracite, did not acquire any mining interests during the early period of development. The interests of the Pennsylvania and of the Erie railroads in the anthracite traffic also developed somewhat later.

The Schuylkill region was characterized by the great number of its mining operations, generally conducted on a small scale, and it was realized, even in those primitive times, that, where the transportation companies were not themselves interested in mining, the independent operator had a much better opportunity. In the other districts, the power of the large mining and transportation companies was regarded with distrust and fear. As early as 1834 the Pennsylvania Legislature made an investigation through a committee into the conditions of the anthracite industry, and a report was made, which said that

> the great and radical error . . . has been . . . the blending of trafficking privileges with the authority to construct canals and railroads . . . . . and to lock up or open at pleasure the resources of a whole valley or community.[5]

[5] Report of the Committee of the Senate of Pennsylvania upon the Subject of the Coal Trade, Harrisburg, 1834, p. 19.

The Delaware & Hudson Canal Company and the Lehigh Coal & Navigation Company were charged not only with exacting exorbitant tolls, but also with locking up huge reserves of coal land, and thus preventing the initiation of profitable coal mining enterprises by others.

The labor factor, which was later to assume importance in the development of the industry, did not have a conspicuous influence in the early period, although it is recorded that, in the middle of the century in the Schuylkill district, strikes were called from time to time to procure suspensions of production, and thereby to improve the prices of coal and the wages of the coal miner.[6]

TONNAGE AND PRICE AGREEMENTS

After the Civil War, anthracite prices, which had been very high, fell persistently to lower and lower levels. The natural result was marked decreases in wages, and the organization of labor unions and strikes. Nevertheless, the anthracite railroads had found the coal tonnage so attractive that new lines, or extensions of old lines, were continually being built, and this great rivalry that existed for coal tonnage led to the purchase or lease of coal lands by the railroads in order to make sure of their traffic position.[7] It is said that the Lehigh Valley Railroad was planning to invade the Schuylkill district, and at that time the Reading Railroad, which had no coal mines, was carrying most of the coal from that region. The Reading Railroad, therefore, hastened to protect its position. All these factors coöperated to precipi-

[6] Report of the Bureau of Labor Statistics on Collective Bargaining in the Anthracite Industry, 1916, p. 13.

[7] Annual Report of the Lehigh Valley Railroad, 1868, pp. 4–5; 1870, p. 20.

tate an era of combination and consolidation.

The most important fact by far was the policy of coal land purchases adopted by the Reading Railroad. Under its new president, Franklin B. Gowen, it began a campaign of comprehensive purchase of most all of the available coal lands in the Schuylkill district.[8]

Neither price nor quality seems to have been seriously considered. Beginning with enormous purchases in 1870 this policy was continued for several years, with the result that 100,000 acres were acquired by 1875 for about $40,000,000.[9]

These coal properties and the vast indebtedness incurred in acquiring them were handed over to a subsidiary company, the Philadelphia & Reading Coal & Iron Company. The Reading interests thus became all at once the largest owners of anthracite, but they were burdened with an enormous debt. Moreover, the cost of mining in the Schuylkill district was apparently higher, on the average, than in the Wyoming or the Lehigh district, so that the Reading, though indeed a giant, was then a very feeble one. In the annual report to its stockholders, the Reading Railroad argued that it was forced into this policy of coal land purchases by other railroads and by the laws of the state.[10]

The president of the railroad in a speech to the English stockholders explained it differently, saying the anthracite railroads at the time these purchases were made had formed a combination which they thought would protect them from low prices.[11]

The acquisition of coal mining property by railroads was facilitated at first by an act of the Pennsylvania Legislature of April 15, 1869, authorizing railroad and canal companies to purchase the stock of coal mining companies (except in Schuylkill County).[12]

Moreover, many charters were granted with the broadest kinds of powers, and such a charter was used by the Reading Railroad for its subsidiary coal company. The extravagant coal land purchases of the Reading interests, however, caused a good deal of dismay and an amendment to the Constitution was adopted, effective January 1, 1874,[13] which prohibited an incorporated common carrier from mining or manufacturing commodities for transportation over its road. This was not retroactive.

The labor difficulties in the anthracite fields apparently contributed to induce combination. About 1869 a labor union called the Workingmen's Benevolent Association became a pow-

[8] Report of the Committee of the Judiciary of the Senate of Pennsylvania in Relation to the Coal Difficulties, Doc. No. 39, Harrisburg, 1871, pp. 1375–6, Coal Statistical Register for 1872, p. 14.

[9] Argument of F. B. Gowen before the Joint Committee of the Legislature of Pennsylvania, July 29–30, 1875, p. 10. The Pennsylvania Railroad began to purchase coal lands about 1870 and in about three years had secured about 85,000 acres at a cost of only $3,857,574. Coal Statistical Register for 1873, pp. 26, 27.

[10] "Had the policy of permitting railroad companies to become owners of lands, and miners and merchants of coal not been inaugurated by the Commonwealth of Pennsylvania, the Reading Railroad Company might never have been obliged to resort to the acquisition of coal lands." Annual Report of the Philadelphia & Reading Railroad for 1876, p. 23.

[11] At this meeting Franklin B. Gowen, president of the Reading Railroad, said that at the time these purchases were made, "the anthracite coal companies of America had formed a combination among themselves, by which they considered that they had absolutely guaranteed themselves against the depreciation of prices from which other industries were suffering." General meeting of the shareholders of the Philadelphia & Reading Railroad in London, June 6, 1877, p. 133.

[12] *Cf.* Jones, *op. cit.* p. 27.

[13] *Ib.* p. 31.

erful factor. Concerted suspension of work was resorted to frequently as a remedy for overproduction. To the influence of this union is specifically attributed, in part, the extensive combinations of mine operators in the early seventies.[14]

While some local combinations among operators are alluded to in the early days, the first important general combination appears to have been in 1873. It was a combination of carriers rather than of mine operators. It regulated the shipments to tidewater, the tonnage being apportioned according to the capacities of the mines. A price schedule was also adopted, but a board of control was authorized to change it. Penalties for violation of the agreement were provided in 1876, though apparently not enforced. The Pennsylvania Railroad Company did not directly participate in the agreement. This combination was dissolved in 1876, and prices of anthracite fell very sharply while production increased.[15]

Another combination was organized in 1878 for one year which controlled production, but not prices. For several years after that informal understandings only seem to have been employed. Meanwhile the Reading, which had leased the Central Railroad of New Jersey, was compelled to cancel the lease on account of insolvency. A third extensive combination was made December 31, 1884, and on March 22, 1886, a meeting was held at the house of the late J. P. Morgan, the banker, for the purpose of procuring its continuation during that year.[16]

In the eighties, renewed efforts were made for a comprehensive labor union. The Miners' and Laborers' Amalgamated Association was organized in 1884, and in 1887 the Knights of Labor. A big strike followed, but the mine workers were defeated, and their unions ceased for many years to have any importance.[17]

READING COMBINATION IN 1892

As an episode in the development of the industry, an ambitious project of combination was tried in 1892 by A. A. McLeod, president of the Reading Railroad. The plan was to lease the Central Railroad of New Jersey and the Lehigh Valley Railroad, to form an alliance with the Lackawanna, and to purchase the output of independent mine operators. On account of New Jersey legal restrictions, the Central was leased by a little unfinished 20-mile railroad in New Jersey belonging to the Reading. Shortly after McLeod secured control of the Boston & Maine System and, thereby, apparently provoked the enmity of powerful banking interests, while the consumers were also antagonized by a sharp advance in prices. When, therefore, the New Jersey court declared the lease of the Central Railroad to be invalid,[18] and the approaching financial crisis shut off hope of banking assistance, the Reading went into receivership for the third time. The lease of the Lehigh Valley, though upheld by the Pennsylvania

[14] Cf. Jones, p. 41, and Roberts, pp. 69, 175–80, *cit. sup.*; also, "Virtue:" "The Anthracite Coal Combination," *Quarterly Journal of Economics*, 1896, p. 300; Rothwell: "The Coal Trade of the United States for 1876–1877," etc.

[15] Mineral Industry, 1895, pp. 160–71, *cit. sup.*

[16] Report of Examiners in the Court of Common Pleas of Dauphin County sitting in equity. *The Commonwealth of Pennsylvania* v. *the Philadelphia and Reading Railroad Company et al.*, *No. 98*, 1886. This interesting document is reprinted in the report on Labor Troubles in the Anthracite Regions of Pennsylvania. House Reports of the 50th Congress, 2d Session, No. 4147, pp. 635–751 (see p. 649). For this period see especially "Mineral Industry," 1895, pp. 172–7.

[17] Roberts, *op. cit.* pp. 182–3.

[18] *Stockton* v. *Central R. R. Company*, 24 Anthracite 964.

courts, went by default.[19] This combination, which included an interlocking directorate with the Lackawanna, controlled, it is estimated, no less than 70 per cent of the total anthracite shipments. A later president of the Reading, G. F. Baer, referred to McLeod's scheme in a contemptuous way as the "work of boys."[20]

In 1896 another serious effort was made to restrict production, and a meeting of the presidents of the different railroads was held at which certain percentages were agreed on for shipments, which became known as "President's percentages." Recommendations as to total tonnage and prices were left to a board of managers.[21]

Meantime, with the financial assistance of J. P. Morgan & Company, the Reading interests were reorganized according to a new plan. A convenient charter was found with which to form a holding company, called the Reading Company, which took over the assets of the insolvent concern. It conveyed the railroad property (except the rolling stock and marine equipment) to a new company, the Philadelphia & Reading Railway Company, taking in exchange all the capital stock. The coal mining property was handed over to the Philadelphia & Reading Coal & Iron Company on a similar basis. These maneuvers were employed to keep the new companies within the prescriptions of the Pennsylvania constitution.[22]

[19] Industrial Commission, XIX, 455–6; Jones, *op. cit.* pp. 50–4.

[20] Transcript of Record, *U. S.* v. *Reading Company*, Circuit Court, Vol. 5, p. 1185.

[21] Saward's Coal Trade, 1897, p. 90; Jones, *cit. sup.* p. 55, *U. S.* v. *Reading Company*, Brief for U. S. before Supreme Court, 1911, p. 59; Transcript of Record, *U. S.* v. *Reading Company*, Vol. V, pp. 1077, 1107.

[22] *U. S.* v. *Reading Company*, 253 U. S. 26, gives a detailed description of this reorganization, pp. 45–7.

Eliminating the Independent

The independent operators had been thrust into the background following the rapid development of the railroad coal companies, which absorbed them either by offering tempting prices, or by making the conditions of competition more and more unfavorable.[23]

The railroad freight rates on anthracite were generally very high, often exceeding a cent per ton mile. Deducting such freight rates from the price received at New York Harbor, or other consuming markets, often left barely enough to cover the cost of production, and sometimes not even that.[24]

The railroad coal companies' accounts furnished abundant evidence of this fact. The Philadelphia & Reading Coal & Iron Company often showed a deficit on its operations. To the Reading interests, this made little difference, provided it resulted from the high freight rates paid to the railroad company. To the independents, on the other hand, a reasonable freight rate was a vital matter.

A Congressional Committee which fully investigated the situation in 1892, concluded that the independents were being gradually eliminated by exorbitant freight rates.[25]

After the establishment of the Interstate Commerce Commission several

[23] Note charge by Government of criminal violation of Act to Regulate Commerce by the Reading Railroad in disclosing to officials of its coal company the shipments, consignees, etc., of anthracite shipped by independents. *U. S.* v. *Reading Company*, Brief for Government before Supreme Court, 1916, p. 75.

[24] *U. S.* v. *Reading Company*, Brief for the Government before the Supreme Court, 1911, pp. 372–401.

[25] The Alleged Coal Combination of the Philadelphia and Reading Railroad Company, etc., House Reports, No. 2278, 52d Congress, 2d Session (1893), pp. iv–vi. Industrial Commission, XIX, p. 458.

suits were brought by independent coal operators to secure reasonable railroad rates. One of the earlier cases was that of Coxe Brothers, a large independent company, against the Lehigh Valley Railroad. The Interstate Commerce Commission required the railroad to reduce its freight rates, in the case of New York shipments, to $1.50 per ton, which was 30 cents less than the rate complained of.[26]

The usual remedy, however, employed by the independent operators, was to start the construction of a new railroad. Coxe Brothers, indeed, during the course of their suit (1888 to 1891), constructed a short railroad, connecting with other carriers.[27]

Few independent operators, however, were able to do this, but they were always ready to encourage a new railway project by pledging their tonnage. Thus, in the later eighties the New York, Susquehanna & Western secured purchase contracts for a large tonnage at 50 per cent of the tide price, but this railroad was absorbed by the Erie in 1898. About 1890 the New York, Ontario & Western entered the anthracite field fortified by contracts for a large tonnage at 55 per cent of the tide price. In 1898 a new railroad called the New York, Wyoming & Western was projected on the basis of 65 per cent coal contracts, but this scheme was checked by the chief railroads which combined to buy out the principal mining company—Simpson & Watkins—behind this enterprise. The independent operators who were left then started in 1899 to build a road from the Wyoming field to the Hudson River (the Delaware & Kingston Railroad Company). The principal backer of this scheme was one of the largest and oldest independent operators—the Pennsylvania Coal Company. It was proposed to buy coal at 65 per cent of the tidewater price. To prevent its accomplishment, J. P. Morgan & Company bought the Pennsylvania Coal Company and its coal-gathering line (Erie & Wyoming Valley Railroad) and turned these properties over to the Erie Railroad at a profit of several millions.[28]

During the latter part of this struggle the independents were effectively organized as the Anthracite Operators' Association.

Meanwhile the large railroad interests which had bought out the Simpson & Watkins collieries in 1898, referred to above, proceeded to forge a new link in the combination by conveying these collieries to the Temple Iron Company, a corporation which had a convenient charter for this purpose. As joint guarantors of the Temple Iron Company to the bankers that had provided the purchase money, the various large railroads were represented on its board of directors, but they sometimes elected as directors, representatives of other anthracite railroads which were not financially interested in the company. It formed, evidently a very convenient means of taking counsel with each other.[29]

Furthermore, to prevent the recurrence of projects for building new railroads into the anthracite region, and to eliminate the independent competition as far as practicable, it was de-

[26] I. C. C., Anthracite Coal Rates; *Coxe Bros. v. Lehigh Valley Railroad Company.* Decided Mar. 6, 1891. (See p. 22.)

[27] Jones, *op. cit.* p. 133.

[28] *U. S.* v. *Reading Company,* 226 U. S. 324, 360–2. I. C. C., No. 4914. "Transportation of Anthracite," pp. 234–7. Jones, *op. cit.* pp. 82–4. Before the Act to Regulate Commerce of 1887, contracts for freight charges on a percentage of the tide price were sometimes made. Cf. Saward, 1874, p. 5; Anthracite Operators' Association Letter, 1902, p. 181.

[29] *U. S.* v. *Reading Company,* 226 U. S. 304, 346–51; Jones, *op. cit.* pp. 76–82; Transcript of Record, *U. S.* v. *Reading Company,* Vol. V. p. 1190.

cided to tie the independents permanently by contracting for their entire future output at a comparatively liberal price. In 1900 and 1901, representatives of five of the large railroads (Reading, Central, Lehigh Valley, Lackawanna, and Erie) met with representatives of the independent operators who agreed on a selling basis of 65 per cent of the tidewater price. Many independent operators disposed of their coal on these terms.[30]

SECOND READING CONSOLIDATION

In 1901 the old Reading plan of absorbing the Central Railroad was resurrected, but, instead of making a lease, it was decided to buy a controlling interest in the capital stock. About 53 per cent was secured by private purchase, negotiated by J. P. Morgan & Company, at a high price ($160 per share). This merger put the Reading in a very strong position in the anthracite trade as respects both railroad facilities and coal resources, the Central having, next to the Reading, the most extensive coal reserves in the district.[31]

Besides the elements just described, the principal outward changes in the combination that developed thereafter related chiefly to the consolidation of interest through intercompany stockholding and interlocking directorates, and in organizing the distribution of coal. Thus in 1901 the Reading, Central, Lackawanna, Erie and Lake Shore Railroads joined together to buy a considerable quantity of Lehigh Valley Railroad stock. With this went an allotment of directorships by which these new stockholders were represented.[32] The Erie was another road which was quite eclectic as to its directors, having ten in 1903 who were on the boards of other anthracite carriers.[33]

[30] *U. S.* v. *Reading Company*, 226 U. S. 324, 338–9. Industrial Commission, XIX, p. 460.

[31] Industrial Commission, XIX, p. 462. Jones, *op. cit.* pp. 61–2.

[32] *U. S.* v. *Reading Company*, Transcript of Record, Vol. V, pp. 1149, 1217.

THE STRIKE OF 1902

From the early days of the combination until the end of the century the labor element had exercised little influence on the course of development, but in 1900, and again in 1902, events occurred which demonstrated that the combination was not invincible. The mine workers in the anthracite fields, who had recently become unionized, initiated a strike in 1900, which they unexpectedly won. This encouraged them to strike again in 1902. This second strike, which was a protracted and bitter one, resulted in the appointment of the well-known Roosevelt Anthracite Strike Commission of 1902. Here again the mine workers won a signal victory, and established for the whole field the principle of collective bargaining. The strike settlement also resulted in a marked advance in wages, costs and prices. The principle adopted in the wages settlement was a wages scale based on the tidewater price. The minimum price for the minimum wages was fixed at what was then an abnormally high level, namely, $4.50, New York Harbor. The operators assumed that practically as the minimum price. Moreover, the advance in wages provided for each advance in prices was such that every advance in prices meant a profit both to the mine worker and to the operator. Under such conditions it is not perhaps surprising that the price averaged well above $4.50.[34]

PRICES AND RAILROAD RATES

For over nine years, beginning in 1903 and ending in 1912, the average

[33] Lauck: Before the U. S. Anthracite Coal Commission, 1920, Summary I, p. 73.

[34] "Collective Bargaining in the Anthracite Coal Industry," *op. cit.* pp. 21–6, 177–10, 117–18.

price of the prepared sizes, sold at tidewater, allowing for summer discounts, remained almost as fixed as the prices of steel rails during the same period. Regularly each year from 1903 to 1911 the April price of "stove" coal averaged on actual sales at tidewater almost exactly $4.45, except in one year when there was a brief labor difficulty, while the average winter prices, running from September to the following March, averaged almost as regularly about $4.95. Similar regularity occurred for the other domestic sizes. On the other hand, for the ten years preceding 1902 the average September price of stove coal had ranged from $3.13 to $4.46 per ton and averaged about $3.86, or over a dollar less than the average price for the nine years following 1902.

A strike occurred in 1912 with an increase in wages which led to another increase in price. This price increase was about 25 cents per ton, though the increased costs on account of the wages advance were only about 8 to 9 cents a ton.[35] As an official report stated in referring to the results of the strikes in 1902 and 1912:

> If, as the operators claim, the advances in the price of coal have come at least partly as the result of collective bargaining with their employes, they have had no reason to complain on account of financial losses resulting from wage increases and shorter hours.[36]

While the high rates charged by the anthracite railroads had been a subject of bitter complaint by the independent operators, and frequent attempts had been made to obtain remedy from the Interstate Commerce Commission, the first comprehensive action of that body occurred in 1915, after an elaborate investigation. It should be clearly understood that the grievance of the independent operator was not merely that the rates were extremely high, but that, the railroad coal companies being in alliance with the railroads, these high rates prevented the independent operators from competing effectively with their chief rivals. The Interstate Commerce Commission held that the conditions found were tantamount to an unlawful discrimination, that the anthracite rates were in themselves exorbitant, and ordered them to be reduced.[37]

Commodities Clause Cases

Just when the anthracite combination had reached the fullness of its power, the Government commenced its attack. Before this there had been frequent investigations, but nothing effective had been accomplished. Although the Act to Regulate Commerce of 1887 and the Sherman Anti-trust Act of 1890 had been on the statute books for over a decade, nothing important had been done with either of them to abate this restraint of trade. Just after the big strike in 1902, however, W. R. Hearst, the newspaper publisher, endeavored to persuade the Attorney General to initiate proceedings under the anti-trust laws, and, failing in this, brought a suit against the anthracite railroads before the Interstate Commerce Commission which developed a good deal of significant evidence, but was never brought to a practical conclusion.

In 1906 the passage of the Hepburn Act containing the so-called Commodities Clause led to the first powerful

[35] "Increase in Prices of Anthracite Coal." Report of the Commissioner of Labor. Document No. 1442, 62d Congress, 3d Session, pp. 12, 33.

[36] "Collective Bargaining in the Anthracite Coal Industry." Bulletin of the United States Bureau of Labor Statistics, No. 191, 1916, p. 120.

[37] Report of the Interstate Commerce Commission in the Anthracite Rate Case, 35, I. C. C. 220, No. 4914.

blow struck at the anthracite combination. This clause reads in its essential parts as follows:

> It shall be unlawful for any railroad company to transport . . . any article or commodity, . . manufactured, mined, or produced by it, or under its authority, or which it may own in whole or in part, or in which it may have any interest, direct or indirect. . . .

The debates in the Congress indicate that the anthracite railroads were especially contemplated in this legislation.[38] The first suit against the anthracite carriers under the Commodities Clause was brought in 1908 against six of the chief anthracite railroads. The Supreme Court in 1909[39] declared that the mere ownership by the railroad company of stock in the shipping company did not bring it within the statute. This decision appeared at first to emasculate the Commodities Clause, and the Attorney General in his annual report for 1909 said that, if the statute could be evaded by such a simple device, it should be amended or repealed.[40] The Government also sought to amend the pleadings in the pending case against the Lehigh Valley Railroad Company, and, when this was denied by the lower court, an appeal was taken. The Supreme Court declared that, if it could be shown that the shipping company was in a state of complete dependency to the railroad, then a case of violation of the law would be found.[41]

After this decision the Lehigh Valley changed its organization to avoid conflict with the law. The Government then decided to proceed against this Company under the anti-trust laws. A clear decision and victory under the Commodities Clause was first obtained against the Lackawanna.[42]

This Company, which formerly mined, shipped and transported coal, changed its organization by establishing the Delaware, Lackawanna & Western Coal Company and arranged by means of a cash dividend for its own stockholders to take up all the stock of the new company. The new company contracted to buy all the coal mined by the railroad company, f.o.b. mine, at 65 per cent of the tide price, but to ship it over the railroad company's lines. When the case was tried there was already a considerable differentiation in the stockholders of the two companies. Nevertheless, the Court held that the scheme was an evasion of the Commodities Clause, and that the coal company was a mere agent of the railroad company. This case was decided in 1915. The Government victory, from a technical point of view, was complete.[43] The results of the Commodities Clause cases led also to some voluntary coal company separations, as, for example, by the Pennsylvania Railroad Company to avoid legal proceedings.

First Anti-Trust Suit

In 1907, just before the first "Commodities Clause" suit was brought, the Government instituted a suit against the chief members of the anthracite combination under the Sher-

[38] Congressional Record, May 7–9, 1906, pp. 6456, 6460, 6496, 6569, Vol. 40, Part VII, 59th Congress, 1st Session.

[39] *U. S.* v. *Delaware & Hudson Company*, 213 U. S. 366. A leading English case is *Attorney General* v. *Great Northern Railway Company*, 1880, quoted by Kibler; The Commodities Clause, 1916, p. 15.

[40] Annual Report of the Attorney General, 1909, p. 4.

[41] *U. S.* v. *Lehigh Valley R. R.*, 220 U. S. 257.

[42] *U. S.* v. *Delaware, Lackawanna & Western R. R.*, 238 U. S. 516. The Court held that there had been also a violation of the Sherman Act.

[43] For a statement of the operator's view of the present status of competition, see "Competition in the Anthracite Industry." Submitted to the U. S. Coal Commission on behalf of the General Policies Committee of Anthracite Operators, June 13, 1923, pp. 34–7.

man Act. The theory of the bill was a general combination to control the anthracite coal industry, as indicated by (1) apportionment of coal tonnage for transportation; (2) combination of the chief railroads through the Temple Iron Company jointly to buy up certain independent collieries and thus to prevent a new railroad from being constructed; (3) identical 65 per cent purchase contracts for independent coal, to remove competition in the coal market; and (4) subordinate contributory combinations between particular members of the group.[44]

The lower court sustained the Government only with respect to the Temple Iron Company, and the case went on appeal to the Supreme Court, where it was decided in 1912 that the Temple Iron Company scheme and also the 65 per cent purchase contracts were unlawful. As to the charge of a general combination to restrict production, the Court said that, while there apparently had been meetings to regulate production, the "weight of proof" was to the effect that such agreements were abortive. As to the subsidiary combinations, the Court declared that such special issues must be prosecuted separately, and not in a general suit in which many other parties were concerned. In declaring the Temple Iron Company to be an unlawful combination the Supreme Court said (p. 353):

> Its board of directors includes the presidents of the defendant carriers, who are also the presidents of the defendant coal companies, and these defendant companies absolutely dominate its affairs. . . . Its board of directors composed as it is of men representing the defendants supplies time, place and occasion for the expression of plans or combinations requiring or inviting concert of action.

In holding the 65 per cent purchase contracts in restraint of trade the Court said (pp. 358–9):

> That these 65 per cent contracts were the result of an agreement through protracted conferences between the independent operators, acting through an authorized committee and officials of the carrier defendants, who were likewise officials of the coal companies subsidiary to the railroad companies, is plainly established. That they were designed by the defendants as a means of controlling the sale of the independent output in the market at tidewater points, thereby preventing competition with their own coal and as a plan for removing the great tonnage controlled by the independents from being used as an inducement for the entry of competing carriers into the district, is a plain deduction.

The Court noticed especially that these contracts were for the life of the mine and in the aggregate covered no less than half of the independent tonnage (p. 367).

The first Reading case, therefore, while only a partial victory for the Government, immediately realized tangible results of great significance in cancelling and in putting under the ban these purchase contracts to tie up the independent tonnage. The Government, moreover, following the clear suggestion given by the Court, promptly indicated its intention to bring new and separate suits against the Reading, Lehigh Valley and Erie interests respectively.[45]

The general combination at that time, it may be observed, was working apparently in almost an automatic manner, and to an extent that made it easy to deny there was any such thing. In those days what are now known as "open price" associations, and declarations of policy, like the "Gary dinners," were regarded by many as

[44] *U. S.* v. *Reading Company*, 226 U. S. 324, 343–4.

[45] Annual Report of the Attorney General, 1913, p. 9.

within the law. Olyphant, president of the Delaware & Hudson, said in the "Hearst case:" "I think the general course has been for the Reading, it being the largest company, to put out its price and all the others have to do is to follow."[46] G. F. Baer, president of the Reading Railway, explained it by saying that Reading's coal costs were 40 to 50 cents higher than those of their principal competitors in the Wyoming region, so that, when the Reading issued its price list, the others were naturally ready to take the benefit of it.[47] But such a plan would not work apparently in a time of slack demand. The combination possessed stronger sanctions than that, and the Temple Iron Company afforded a convenient basis for regularly bringing together all the influential factors in the trade.

War and Government Intervention

With the Great War the price of anthracite increased rapidly, beginning in the autumn of 1916. In the spring of 1917 the Federal Trade Commission in coöperation with many of the producers, especially the larger companies, tried to prevent any unnecessary increase in prices by moral suasion.[48] The large companies agreed to abide by their spring opening prices. A good many of the smaller companies objected to this price level, and insisted on taking a higher price,—at first 35 cents and later 75 cents premium. They justified this position on the ground that their costs were higher and that they did not enjoy any advantages from transportation of anthracite, which inured to the advantage of the large companies. This *status quo* was recognized by the President, when he fixed prices under the Lever Act in August, 1917. Thereafter during the war, the Fuel Administration fixed the prices of anthracite and policed the distribution. The function of the Federal Trade Commission was practically limited to ascertaining and compiling the costs for the use of the Fuel Administration.[49]

During the war costs in the anthracite field rose rapidly and prices were advanced with them.[50] Since the war the same movement has continued, partly on account of advances in wages. But the prices and profits of the operators have continued to advance more rapidly than costs, as is shown in a comprehensive way by the report on costs and on profits recently issued by the United States Coal Commission.[51]

[46] Quoted by Jones, *op. cit.* p. 172.

[47] Transcript of Record, *U. S.* v. *Reading Company*, V. pp. 1176–7.

[48] Federal Trade Commission, Report on Anthracite and Bituminous Coal, 1917.

[49] For the history of anthracite price fixing during the war, a convenient summary may be found in a publication of the War Trade Board, namely, *Government Control Over Prices.* Washington, 1920, pp. 150, *et seq.* A correction should be made, however, with respect to the originality of the method used by the Engineers' Committee in grouping costs for price-fixing purposes, which was perhaps obtained from reading the Report of the Engineers' Committee, 1918–19, United States Fuel Administration. The Federal Trade Commission in reporting coal costs to the Fuel Administration, before the Engineers' Committee was appointed in 1918, included tabulations of companies grouped by ten-cent intervals of cost, from low to high, with the tonnage for each cost group. Early in 1918 percentages of tonnage were added, a method used by the Federal Trade Commission in reporting copper costs to the War Industries Board in 1917. The present writer explained and applied this principle in 1904, in criticising the prices of the German Coal Syndicate. (See Walker: *Monopolistic Combinations in the German Coal Industry*, 1904, pp. 156–8.)

[50] Cost Reports of the Federal Trade Commission; Coal, No. 2, Anthracite, 1919.

[51] Reports of the United States Coal Commission. *Cost of Production of Anthracite Coal*, by David L. Wing and James E. Black; *Investment and Profits in Anthracite Mining.* (Mimeograph publications, released on Aug. 23, 1923, and Nov. 10, 1923, respectively.)

The economic disorders engendered by the war in the anthracite industry have continued to disturb it ever since. Strikes both in the anthracite and bituminous industries have been the consequence. The question of prices has also been acute. While the general dislocation of economic conditions may partly explain the situation, the results have been extremely unsatisfactory to the consumer. Even his urgent demand for information was disappointed through the enjoining of the Federal Trade Commission from collecting and reporting the prices, costs and profits from coal mining. That difficulty was recently met, for the time being, by the establishment of a temporary governmental organ—the United States Coal Commission. Its reports are rapidly becoming available, and it has recommended that the periodical reporting of essential data by some permanent organ of the Government should be provided for by Congress.

Since the war many of the independents have been selling coal at a premium, except when the market has shown a slack demand, and oftentimes this premium has been as much as $4. The argument generally advanced is that it is necessitated by costs of production. Costs of production, however, are more or less variable factors, depending on the plan of mining operations (whether for large companies or for small ones), and a production policy that enhances costs unreasonably is not a justification for exorbitant prices.

DISSOLUTION OF THE READING AND LEHIGH VALLEY COMBINATIONS

The second Reading trust suit, which was begun in 1913, was limited to the immediate combination of the Reading interests. The decision in the lower court in 1917 was favorable only in part. Appeal was taken to the Supreme Court, where the case was argued three times before the final decision in 1920. The substance of this decision was briefly as follows: The lower court in its requirement that the Central Railroad (controlled by the Reading) should dispose of the Lehigh & Wilkes-Barre Coal Company was affirmed, as well as in its requirement for cancellation of the restrictive covenants in leases that coal must be shipped over the railroad interest making the lease. The Supreme Court went further, however, and ordered that the Central Railroad should be separated from the Reading Railroad and that the latter should be also separated from the Reading Company and the Reading Coal Company, and each of them from the other. In making such separation the Court said that it should be done,[52]

> with such provision for the disposition of the shares of stock and bonds and other property of the various companies, held by the Reading Company, as may be necessary to establish the entire independence from that Company and from each other.

The practical intent of the decree is to secure different shareholders for each company, but, while this part of the plan is being worked out, provisions are made to prevent the exercise of a common control.

In an elaborate opinion the Court reviewed the history of the Reading activities in the anthracite trade and found therein a persistent effort to monopolize it in violation of the anti-trust laws. The final decree in this case was only recently made on account of further litigation as to the method of distributing the stock.[53]

[52] *U. S.* v. *Reading Company*, 253 U. S. 26, 64.

[53] *U. S.* v. *Reading Company*, 273 Fed. 848. Final Decree made by the District Court of the United States, Eastern District of Pennsylvania (approving "third Modified Plan"), June 27, 1923.

At the same time that the second Reading suit was instituted, a bill was filed against the Lehigh Valley combination, the principal elements of which were the Lehigh Valley Railroad Company, the Lehigh Valley Coal Company, Coxe Brothers & Company, Inc., and the Delaware, Susquehanna & Schuylkill Railroad Company. The decision of the Supreme Court was handed down in 1920.[54] The opinion reviewed the entire history of the Company and concluded that it showed evasions and violations of the laws of Pennsylvania, the "Commodities Clause" and the anti-trust acts. In the matter of coal lands, it had systematically absorbed the independents including one very large producer — Coxe Brothers & Company—which had a small railroad and was bought out at a high price in 1905. All the principal elements of the combination, as well as the more recently organized Lehigh Valley Coal Sales Company, were ordered to be made separate and entirely independent companies. The final decree in this case was made November 7 in New York City.[55]

PRESENT SITUATION

It is not possible at this early date to form a satisfactory conclusion as to the effectiveness of all of these various efforts of the Government to restore competitive conditions in the anthracite industry, but a candid consideration of the facts makes it plain that the competitive situation is substantially improved in several respects over that prevailing fifteen or twenty years ago. In the first place, the coal companies have been in a considerable measure dissociated in stockholders' interest, as well as in technical form, from the railroads which formerly owned them; second, the combination between the coal companies of the Reading and of the Central has been abolished,—companies which between them have considerably over one half of the available unmined coal;[56] third, the percentage contracts and restrictive leases which tied up the independent operators to certain railroads have been annulled; and, fourth, it has been made somewhat dangerous for these companies to continue in any conspiracy to regulate output, or to maintain prices, whether through an organization like the Temple Iron Company, or otherwise. Under the decrees against the Reading and Lehigh Valley Companies the courts retain jurisdiction.

With regard to this last point, however, it should be noted that the United States Coal Commission in its "Separate Report on the Anthracite Industry" finds that the competitive situation has not yet been fully reformed; on page 35, it says: "The fact of an economic concert amounting to combination is established beyond a reasonable doubt.[57] Such a combination may occur, of course, in almost any industry and constant watchfulness is, therefore, necessary. In this connection it is interesting to note another statement of the Coal Commission in this same report (see p. 39); it says:

> If production is kept under demand, as it has been over many years, any temporary disturbance will of course give opportunity for swollen profits. . . . This does not, however, absolve the anthracite operators from responsibility for creating

[54] *U. S.* v. *Lehigh Valley Railroad Company*, 254 U. S. 255.

[55] *U. S.* v. *Lehigh Valley Railroad Company*, Final Decree of the District Court of the United States, Southern District of New York, November 7, 1923.

[56] Griffith: *Anthracite Coal;* Bond Record, 1896, p. 501.

[57] Cf. Competition in the Anthracite Industry. Submitted to the United States Coal Commission on Behalf of the General Policies Committee of Anthracite Operators, June 13, 1923. This report denies the existence of any acts in restraint of trade in recent years (pp. 3–4).

the permanent conditions which in a crisis make such profiteering possible; . . .

Furthermore, the separation of interest between some of the railroad companies and the coal mining business is by no means complete, and the history of the industry indicates what this means to the independent operator.

Again, the reserves of several of these coal companies—above all of the Philadelphia & Reading Coal & Iron Company—still form a very large proportion of the total supply. A recent report of the United States Coal Commission showed that several of these companies have reserves that would not be exhausted at the present rate of production for over a hundred years.[58] For some of these companies it might be a positive financial relief if they could dispose of a part of their holdings at a fair price.

At the present time, no doubt, the confused and sometimes despairing attitude of the consumer, on account of the recent succession of coal shortages and price panics, constitutes a real psychological difficulty also. If the consumer will insist with determination on getting a comparatively cheap coal as vigorously as he insists on getting a supply, it is possible to do it. The use of substitutes for anthracite is a potent weapon that is in his own hands.

It is not the purpose of this paper, however, to point out what further reforms are needed, much less to suggest specific remedies.

In conclusion it may be affirmed that, if the people will pertinaciously insist upon the complete restoration and maintenance of competitive conditions in the anthracite trade, there appears to be no practical reason why this cannot be done, but the defense of economic liberty, as well as political liberty, demands eternal vigilance.

[58] Report of the United States Coal Commission: "Investment and Profits in Anthracite Mining," p. 14. The Coal Commission states that the reserves of the Reading would last more than two hundred years at the present rate of production, and in this connection says: "The American people do not . . . believe that it is an inherent right of any corporation to embark on a two hundred-year speculation in land and ask the public to pay the cost of carrying it, out of the present price of coal." (See pp. 14, 16.)

The Recommendations of the United States Coal Commission

By Edward Eyre Hunt
Secretary, the United States Coal Commission

THE United States Coal Commission expired by limitation of statute on September 22, 1923. Its reports cover a wide range of subjects and when published by the Congress they will fill six or eight large printed volumes. The recommendations which the Commission deduced from this vast accumulation of facts were given to the public at various times on mimeographed sheets; they have not yet been printed, as the Commission had no authority to print. For this and doubtless for other reasons they have not been adequately discussed, and it is my duty to attempt to summarize the recommendations and to indicate what seem to me the basic principles on which they rest.

The Commission was a creature of the Congress; its members were appointed by the President; its duty was

> to investigate and ascertain fully the facts and conditions and study the problems and questions relative to the coal industry with a view to and for the purpose of aiding, assisting, and advising Congress in matters of legislation which will insure a supply of this commodity (coal) to the industries and the people generally throughout the country and maintain the uninterrupted flow of commerce among the states, or any legislation which Congress may, after said investigation, deem wise and which, under the Constitution, Congress has the power to enact.

The Act also prescribed for study a miscellaneous list of topics, such as: the ownership and titles of the mines; prices of coal; organizations and persons connected with the coal industry; cost of production; profits realized by the operators or owners during the last ten years; profits of other persons or corporations having to do with production, distribution, or sale of coal; labor costs; wages paid; wage contracts; irregular production; waste of coal; the causes of strikes; the advisability of legislation having to do with government and private ownership, regulation or control—all for the purpose of providing information "which would be deemed helpful in determining and establishing a wise and efficient policy by the Government relative to said industry."

The recommendations as to legislation, then, are of primary importance. They represent the Commission's answer to the Congress as to the initiation by the Government of "a wise and efficient policy" for dealing with coal.

I. Government Action: Federal, State and Local

(1) The Commission recommends to the Congress and the President: Continuous fact finding, publicity, and regulation of the coal industry, both bituminous and anthracite, through use of the powers of the Federal Government over interstate commerce. Like the railroads, the coal industry is to report to a public authority, and the Commission insists that the public interest places limitations on the rights of owners of coal lands, operators, mine workers, carriers and dealers.

(2) As the administrative agency through which these powers are to be exercised it recommends the creation

of a coal division in the Interstate Commerce Commission. The proposed coal division is to correct abuses, to collect information, and to act in emergencies as Federal Fuel Distributor.

(3) The Commission recommends Federal licensing of those who buy or ship coal in interstate commerce.

(4) It recommends a Federal tax on royalties and differential profits.

(5) It recommends the adoption of a standard uniform ton. At present, of course, both the long ton of 2,240 pounds and the short ton of 2,000 pounds are in use.

(6) The Commission further recommends that the Interstate Commerce Commission reëxamine differential railway freight rates with a view to (a) the promotion of coal movement by water, (b) the discouragement of the long haul by rail.

(7) It recommends modification of the rules governing distribution of railroad cars in periods of shortage so as to give consideration to the commercial ability of the producer to sell coal rather than to mere ability to produce and load it into cars.

(8) It recommends that contract coal be given precedence over spot coal deliveries.

(9) It recommends that the Government, as administrator of 50 million acres of coal lands, amend the leasing laws so as to restrict the opening of new bituminous mines.

(10) It recommends that "Congress designate an agency to unite with the industry in continuing studies of unemployment" and "of the wage structure;" this agency serving as the medium of publicity for wage rate information and being prepared to make special compulsory investigations whenever there is a threat of failure to renew a wage agreement.

(11) Continuous investigation and publicity as to labor relations with the possible resort to mediation at the instance of the President of the United States, is recommended.

(12) Nationalization of the mines is not recommended.

(13) Compulsory arbitration is not recommended.

(14) Compulsory incorporation of the union is not recommended.

(15) Price fixing by the Government is not recommended.

(16) The Commission recommends the consolidation, grouping or pooling of bituminous mining operations, under such restrictions as are prescribed for railroads in the Transportation Act.

(17) The Commission recommends that the state and Federal Governments coöperate in inspection, revision of mining codes, supervision of compensation insurance and safety education. It points out that the mining codes of some states are badly in need of revision.

(18) It recommends that communities license retail coal dealers, organize coöperative associations, open municipal fuel yards, or in other ways, as they may see fit, deal with the problem of local distribution of coal.

II. Action by Operators and United Mine Workers

The recommendations of the Commission as to "a wise and efficient policy by the Government" are not by any means all that it has to offer. Indeed, in the opinion of the commissioners the recommendations to the industry are of equal if not of greater importance than those to the Government.

(19) To the industry the Commission recommends a number of improvements in management methods: the development and efficient application of mechanical devices to replace hand

loading; better control and coördination of underground operations, particularly cutting, loading and haulage; standardization and coördination of the work of the individual mine worker; standardization of details of construction and dimensions of mine-cars, locomotives, track and all other equipment; and multiple shifting of work in the mines and preparation plants.

(20) The Commission calls special attention to the British wage plan as a method for furthering the common interest of miners and operators in continuous operation; a plan which provides that miners and owners share the profits of the business in defined proportions.

(21) Betterment of living conditions is also emphasized as a field for coöperative effort of miners and operators.

(22) Organized effort by both parties is recommended in studying the problem of unemployment; the wage rate structure and its relation to the different jobs in the mines; and the perfection of machinery for settling disputes through conciliation.

(23) Voluntary arbitration is stressed.

(24) To the operators obvious improvements in personnel management, training of foremen, centralized responsibility for labor relations, and more effective organization of operators to deal with labor relations, including the appointment of district and national labor commissioners to work out a national labor policy, are recommended.

(25) Collective bargaining to work out a system of national negotiation with district agreements is recommended.

(26) The check-off is not recommended.

(27) Complete unionization is not recommended.

III. Individual Action

(28) Consumers, large and small, are urged to buy for regular delivery on contract and to store coal. Thrift in the use of coal is recommended, as well as wider use of technical information relative to fuel economy.

(29) The wider use of substitutes for anthracite is recommended.

IV. Basic Principles

The more important recommendations of the Commission rest on two propositions. First is the proposition that coal is clothed with a public interest and that the production and transportation of coal constitute a single service, since coal is not mined until the railroad car for its transportation is at the mine. Coal is not primarily a commodity, then: it is a service. The type of government regulation which is recommended rests on this basic proposition.

This point of view runs counter to the belief of many operators and business men in other fields who hold that such an assumption disregards the facts as well as the spirit of American institutions, and that interference with the coal business foreshadows interference with other branches of business. They point to recent court decisions and to one of the *obiter dicta* of the Supreme Court in the decision affecting the constitutionality of the Kansas Industrial Court, where the mining operator and the miner are lumped with the butcher, the baker, the tailor and the wood chopper.

They can also point to the defeat of the Calder and Frelinghuysen bills in 1921 which was due to the fear of business men that regulation of coal meant regulation of general business.

Regulation in the present instance will not be accomplished without a conflict.

The second proposition is that the coal industry can reform itself. An important element of the United Mine Workers of America and a section of the general public do not believe this. District No. 2 of the Mine Workers contend officially that only government ownership and operation of the mines will reform the industry, and however half-hearted may be the support of this program by the present leaders of the Miners' Union, it will probably continue to be an issue and to affect public thinking on the subject of coal regulation.

V. A Coal Division in the Interstate Commerce Commission

The Coal Commission, as I have indicated, proposes the creation of a new division in an existing governmental agency. The proposal also emphasizes the fact that the key to coal is transportation.

Under the proposed plan the Geological Survey will continue to classify and value the public coal lands, and to compile figures on coal production, consumption and commercial stocks on hand. The Bureau of Mines will continue its investigations in mining technology, mining safety, fuel economy, quality of coal and the administration of government leases. The Bureau of the Census will continue its work in the biennial Census of Manufactures and the General Census of population, while the Public Health Service will investigate sanitary conditions.

Information on costs, sales realization, margins of profit, wage rates, earnings of miners and a wide range of economic and engineering facts of the sort which the United States Coal Commission has collected, the Coal Division in the Interstate Commerce Commission will be empowered to collect and to publish. It will be empowered to secure data from other government bureaus.

Finally, it will act in emergencies as Federal Fuel Administrator, subject to the direction of the President.

VI Some Aspects of Regulation

The Commission defines the function of the Government as that of supervision with substantial powers of regulation, and adds:

> This may be regarded as the characteristically American and constitutional method of dealing with such a national problem as is now presented in the coal industry.

The Commission's proposals are intended to increase rather than to decrease the sense of responsibility within the industry.

Extraordinary emphasis is laid on the value to the industry of such investigations as the Commission has pursued, and of such as the miners, the operators and certain other bodies have made during the past year, either in supplementing the Commission's investigations or in duplicating them.

Complete publicity through a Federal agency with power to compel reports and to prescribe their form, is the basic recommendation in this section.

The Commission also recommends the levy of a graded tax on royalties and differential profits. It points out that this will not lower the price of coal to the consumer, but that it will secure a public revenue without increasing the price of coal.

> Taxes falling lightly on the low-profit operator and more heavily on the high-profit operator in proportion to his ability to pay will benefit the consumer indirectly through lightening the tax burden elsewhere. . . .

It shows further that the present sales tax levied by the state of Penn-

sylvania on anthracite coal gives no protection, and is passed on to the consumer in the form of higher prices. An excess profit tax, however, would not be added to the price of coal, and thus would not be levied on the consumer, as it would fall only on those operators who have differential advantages. Limitation of margins to a reasonable return on legitimate investment and elimination of monopoly profits whether found in the form of royalties, of operators' and dealers' margins, and of freight rates, are recommended.

In the case of bituminous coal, where, of course, the natural monopolistic conditions characteristic of anthracite do not obtain, the recommended regulation is primarily based on the granting and withholding of transportation service. Following a suggestion of the Commission, the Interstate Commerce Commission has recently denied to a railroad the right to put in a siding and to furnish cars and transportation to a prospective mine on the ground that the car supply of the railroad is inadequate and that the bituminous coal industry is overdeveloped.

Finally, the most convenient and practicable method of exercising regulatory powers through a Coal Division in the Interstate Commerce Commission appears to the United States Coal Commission to be the licensing of all who ship coal from one state to another or who buy and sell in interstate commerce whether as operators, wholesalers or jobbers. Necessarily there would be certain conditions attached to the granting of a license, and violation of these conditions would be cause for suspension or revocation.

VII. A NATIONAL LABOR POLICY

The Commission proposes that Congress designate an agency to unite with the industry in continuing studies of unemployment, as an effect or irregular operation, and studies of the wage structure, serving as a medium of publicity for wage rate information in the non-union fields as well as of the other basic facts on which industrial relations depend. This means continuous investigation, bringing about such an exchange of information with management as will stimulate improving practice, and making the union constantly more heedful than it now is of its public responsibilities.

Continuing investigation would be accompanied by timely and discriminating publicity. Progress in the improvement of management, and the effectiveness of agencies which management might employ to bring about better labor relationships would need to be reported, as well as the workings of the adjustment machinery, and the progress of the union in maintaining discipline and in meeting responsibilities under agreements.

The Commission recommends that all agreements between operators and union contain a clause which would provide for their automatic renewal, except as to such provision as one party or the other may have given 90 days' notice in advance of the date of terminating the agreement. In case of a failure to agree, a report to the President should be made not later than 60 days before the expiration of the agreement; and if with such continuous investigation and publicity a disagreement should still be carried to the point of threatening a stoppage of work, the Commission then recommends that a special report be made to the President of the United States, who shall designate a person or persons to inquire into the situation and to make to him a special report and award on or before the date of expiration of the agreement. The Commission points

out that the award could be made public or not, as the President would deem wise.

VIII. THE BRITISH WAGE PLAN

At least one of the important recommendations is apt to attract too little attention. It is the recommendation to the industry relative to the British Wage Plan. The Commission says:

> Part-time operation which causes increased costs to the operators . . . at the same time cuts in half the miners' earnings. This common interest in continuous and successful operation finds a concrete expression in the present British wage agreement, which provides that miners and owners share the profits of the business in defined proportions, the profits being figured not on a single mine, but on the whole district.

The British wage agreement can hardly be summarized in a paragraph. It provides for audits of the operators' books and profit sharing. From the aggregate bill of wages of the district is deduced a standard wage which represents the rates in July, 1914, with certain increases. Seventeen per cent of the amount of the standard wages constitutes the standard profits of the owners, and after deducting the standard wages, the standard profits and the costs of production other than wages from the gross proceeds of the district, the surplus is divided in the proportion of 83 per cent to wages and 17 per cent to profits. The standard wages and the share of the surplus apportioned to wages gives a percentage of the basic rates which constitutes the rate of wages payable during the next pay period.

If in any period the proceeds have been insufficient to meet the standard profits, the deficiency is carried forward as a first charge against any surplus in subsequent periods.

IX. COAL CONTRACTS AND COAL STORAGE

Emphasis is laid on the necessity of making binding contracts, so that every tonnage contract is recognized as a fixed obligation on the part of the seller to ship and the buyer to accept the coal called for in the contract, unless prevented by causes definitely stated in the contract, which are beyond the control of the parties.

The Commission finds that consumers of coal, large and small, are responsible to no small degree for the bad functioning of the industry. Peak demand for coal involves a peak demand for coal transportation, and this cannot be met except by an expansion of rail equipment and facilities.

> Regular, systematic, large-scale storage of bituminous coal by consumers during the seasons of low consumption is the public's largest opportunity and responsibility in solving the coal problem,

the Commission states. To this vital subject the Federated American Engineering Societies are now giving their attention, and a comprehensive report, utilizing the findings of the Coal Commission, will be available this winter, exhaustively treating the chemical, engineering and economic problems involved in large-scale coal storage.

I have emphasized the unity rather than the diversity of the aspects of the coal problem. The basic contrasts between the anthracite and bituminous industries are large, and the Congress took account of that fact in requiring of the Coal Commission a separate report on anthracite. The Commission was continually and duly impressed with the variety of conditions, not simply as between the hard and the soft coal industries, but as between the widely scattered and multifarious

forms in which soft coal is found and exploited.

But there is unity as well as variety in the problem of coal, and any change in public policy toward this problem must be a united and consistent change. Such a change can be brought about only by persistent thought and unified effort.

The coal problem will not be solved in a month or a year, or even in several years. It will not be solved by panaceas or nostrums. That is the lesson of the work of the United States Coal Commission. And if you, the public, do not understand and act and continue to understand and act, and to make the Congress and the industry act, the collection of facts and the making of recommendations are vain things.

The Need for Uniform and Up-to-Date Data on the Cost of Production, Investment and Profits of Operators

By David L. Wing
Economist, Washington, D. C.

IT is not my purpose to burden you with a mass of statistics. You can find figures to your heart's content in voluminous reports either already accessible or shortly to be made public. And, I must warn you at the beginning, that there is no simple, short and accurate generalization that can be made either in regard to anthracite or bituminous costs or investment that will enable you to survey the problem at a glance. Conditions are so varied that the attempt to measure changes in the industry through the use of country-wide averages would be of no value.

The situation that confronts the person seeking information has been clearly stated by the U. S. Coal Commission at the beginning of its recent report on "Investments and Profits in Anthracite Mining," in the following language:

> The man on the street wants a simple answer to the question, "How much do anthracite operators make?" It would no doubt satisfy him to be told "The profit in anthracite mining is so much per ton, and yields the operator such and such a per cent return on his investment." But such a simple answer cannot be truthfully given, however much it may be demanded by the consumer. It cannot be given because the business of mining anthracite is one of markedly varying costs, and because, therefore, some operators pay very large dividends and others very small dividends, or sometimes no dividends at all. There is no single figure that represents either the profit per ton, or the per cent return on the investment. Where the variation between companies is so great, averages are misleading.

What the Coal Commission said about anthracite investments, profits and costs, applies in an even greater degree to the bituminous industry.

In place of trying to load you down with statistics, I am going first to refer you briefly to the various sources of such information which have become available to students during the past few years, and in which the statistics are set forth generally with all the meticulous and tiresome but necessary cautions, exceptions and particularities, which you can use or disregard at your pleasure.

Principal Published Sources of Cost and Investment Information

The principal sources of cost and investment statistics of operators in the *anthracite* industry are the following:

Report No. 2 of the Coal Cost Reports of the Federal Trade Commission, published in 1919. This covers the cost of production and sales realizations of about 60 per cent of the tonnage for the period 1913–1918, and for about 99 per cent of the tonnage produced in 1917 and 1918.

Report of the Engineers' Committee of the U. S. Fuel Administration, published in 1919. This covers the price regulation studies made by the Fuel Administration Engineers' Committee for use of the Fuel Administration.

The U. S. Coal Commission's Report on "The Anthracite Industry" (July 5, 1923), the Appendix on "Cost of Production of Anthracite Coal," and the Report on "Investments and Profits in Anthracite Min-

ing." The Coal Commission had access to the original cost of production material covering 1913–1918, which is in the files of the Federal Trade Commission, and itself secured the information bringing it down through March, 1923. The Coal Commission obtained information relative to investments and earnings for a large part of the output directly from the operators' books, with its own accountants, most of it covering the ten-year period 1913–1922.

In addition to the foregoing sources, mention should be made of valuable material which exists in the published records of the hearings of three Senate Committees that have investigated the coal situation in late years, whose chairmen were Senator Reed (Subcommittee of the Senate Committee on Manufactures, 1917–1918), Senator Freylinghuysen (Subcommittee of the Senate Committee on Interstate Commerce, 1919–1920), and Senator LaFollette (Senate Committee on Manufactures, 1921). Valuable articles on aspects of costs and investment have also appeared from time to time in the principal coal trade journals.

So much for the *anthracite* cost and investment sources. In the case of *bituminous*, the material, while much more bulky, does not by any means afford as complete a study. Prior to 1916 there exists, as far as I know, only one collection of costs and sales realizations, and that has not yet been made public. I refer to material collected for the period 1906–1916 by the Bituminous Operators' Committee, a partial use of which was made in one of the briefs submitted by them to the Coal Commission. It is to be hoped that this very valuable information, which throws light on the ups-and-downs of the industry for the decade preceding the European War, may some time be made public in sufficient detail to be used in connection with the later information.

Starting with 1916 there has been accumulated a very substantial mass of cost of production information on bituminous coal. The principal sources are as follows:

The six cost reports of the Federal Trade Commission, issued in 1919 and 1920, cover 1916–1918. The published figures for 1916 and 1917 were for about one third of the total output during those years, and those of 1918 for about 90 per cent. The cost information which the Federal Trade Commission secured in the first half of 1920, originally issued in mimeographed form, was later republished in that Commission's "Preliminary Report on Investment and Profit in Soft Coal Mining," which was issued in 1922.

For a study of the Fuel Administration price regulation policies for bituminous coal, the report of the Engineers' Committee, already referred to, should also be consulted.

Bituminous cost information for the years 1919 and 1920 is much more meager. The principal source is the information compiled by Senator Calder's Committee from reports made by operators to the National Coal Association, and obtained through subpœna from the latter's files, by the Calder Committee. The information so derived and compiled appears both in the published hearings of the Calder Committee, and of the LaFollette Committee, to which the Calder bill for publication of production and profits in coal was referred for consideration.

Some cost of production and sales realization information for a few months of 1919 appears in the hearings of Senator Frelinghuysen's Committee, having been submitted by the operators. Much, if not all, of it is the same material which was submitted by the operators to the President's Bituminous Commission in the presentation of their case before that body following the strike of November, 1919.

The U. S. Coal Commission, for its work, had access to the original records of the Federal Trade Commission covering 1916–1918, and the first half of 1920, and also to the original work sheets of the Calder Committee, covering 1919 and the first nine months of 1920. It gathered itself, from the operators, the information for 1921 and 1922.

The report of the U. S. Coal Commission on the "Cost of Production of Bituminous Coal" has not yet been made public, but will appear soon. It will present several sets of figures—for identical operators whose records were available as far back as 1916, for those whose records were available

only as far back as 1918, and for all those whose records were available for 1921 and 1922.

On bituminous investments and profits, there is the report made in 1922 by the Federal Trade Commission, already referred to. The information on which it is based was principally gathered early in 1920. The U. S. Coal Commission's report on the subject has not yet been issued, but will appear soon. It covers information during the past ten years, for certain operators who produced a substantial part of the total tonnage, and, for shorter periods, for a much larger number of operators.

Attention should be called to the large quantity of information on different aspects of bituminous costs and investment that is contained in the various Senate Committee hearings already noted under *anthracite*, and also to the valuable material in the coal trade journals.

I have gone into the foregoing detail on sources, because I have found that very often writers on the coal problems have overlooked the mass of such information available to them, and have used secondary sources or arbitrary estimates and assumptions where they could have better safeguarded their statements through a reference to the published facts.

THE USES AND LIMITATIONS OF SUCH INFORMATION

Such is the material at present available or shortly to be made so. Now let us see to what practical use it can be put. And, first of all, again there must be emphasized the need of caution in making generalizations.

The use of averages which relate to the country as a whole, and even sometimes to states, is likely to be misleading. This is true whether we speak of costs, of sales realizations, or of margins. Few people outside of the coal-producing end of the industry appreciate the great importance of guarding against making broad generalizations, and then attempting to use them with relation to particular fields or operations. Think, for an instant, of the differences that exist between operators in the same field, as well as between different fields in such cost-affecting mining conditions as thickness, hardness and purity of the coal in the seam, the pitch at which the seam lies, the faults and irregularities, and the character of the top and bottom of the seam, the differences in drainage and ventilation (due to differences in the water and gas encountered), the age of the mine, and the type of mining followed. Consider also the effect on costs of differences in transportation facilities afforded by the railroads, of the differences in the labor policies. Then, in addition, come the differences due to relative efficiency of management, of the use of labor-saving mining machinery, and in the further preparation of certain types of coal after it has reached the mouth of the mine, before it can be shipped to market. And there are other differences that affect costs—but I have named the principal ones. The sales realizations are also affected by differences that probably are greater between fields than between the various operators in the same field. The sales realization for the coal from a field depends in part on the uses to which it can be put—for example, for metallurgy, for gas, for blacksmithing, etc., for households, and apartments, or for steam making, and in part on the availability to the consumers at a competitive price of suitable coal from other fields, or of other forms of fuel. It is still necessary, in any discussion with the "man in the street," and even with persons possessed of a higher degree of general information, to constantly reiterate that in many of their essential economic features, the bituminous and

the anthracite industries have little in common, and must not be lumped together in the same generalization. And to a somewhat less degree, perhaps, but still a very necessary degree, it is necessary to guard against making generalizations that involve the whole bituminous or the whole anthracite industry.

Now, what are the general uses to which the cost of production information has thus far been put?

The most important use thus far made of it was to furnish the basis for the price regulation of coal during the war. The President's bituminous coal prices of August 21, 1917, were applied to some 29 districts in the United States. Before the end of the Fuel Administration this number had grown to 92 districts as defined for price-fixing purposes. It may be of interest to note that the engineers of the Coal Commission found it desirable to classify the bituminous coal mines of the country, for the purposes of the work of the Commission, into 92 fields, some of which had two or three distinct parts, making in all 106 separate classifications (counting a field lying in two states as a separate classification) for the presentation of cost of production figures.

Since the days of the Fuel Administration, there has been some use made of the information collected on cost of production in connection with the presentation of arguments by one side or the other in wage disputes, and for throwing light on the changing relation of sales realizations to costs of production, particularly at times when there was a crisis of some nature in the industry, such as when costs increased as a result of the wage increase award of the President's Bituminous Coal Commission early in 1919 and when sales realizations increased through the effect of the buyer's panic in 1920.

THE RELIABILITY OF THE INFORMATION

Most of the information on cost of production for 1916–1918 and the first half of 1920 was obtained from sworn reports submitted by operators to the Federal Trade Commission. In certain fields the information, prior to August, 1917, was gathered by the Commission's accountants direct from the books. The Coal Commission collected its information, for 1921 and 1922, on sworn reports submitted by the operators. In the case of the Federal Trade Commission figures, there was a certain amount of checking up by field agents on the operators' books of the figures reported. The Coal Commission did not send its agents to the operators' books for this purpose. It did, however, carefully compare the figures reported to it, with those submitted by the same operators to the Federal Trade Commission. In its report on the "Cost of Production of Anthracite Coal," the Coal Commission made the following statement:

> The U. S. Coal Commission has made no revision of the figures reported to it by operators, nor does it consider that it should do so. The experience of the Federal Trade Commission showed that any effect on the total figures of a few false statements was negligible so far as affecting any general results. This was at a time when, because of governmental price fixing, there was a strong incentive to dishonest operators to report inflated costs. Accordingly, the U. S. Coal Commission in presenting figures derived from sworn statements of the operators has attempted no arbitrary revision.

The following was the experience of the Federal Trade Commission:

> The "claimed costs" are compiled from the original figures which appear on the operators' reports. The "revised costs" are compiled from such reports, after the

"claimed costs" were revised by the accounting staff of the Commission, in order to readjust monthly costs and to eliminate inflated costs. As examples of the first kind of revision may be mentioned the prorating, over several months, of payments for supplies, insurance, taxes, etc., made in some one month, but which apply to several months' operations. There were also a few instances of obviously inflated costs. The obvious inflations on the monthly cost reports were detected through the comparison of the costs of such operators, either with their own previously reported costs, or with costs of the other operators operating under similar conditions. In each case, the operator was given opportunity to furnish a supplementary statement showing the principal items making up the cost item which was questioned, and on the basis of such detailed information, the revision was made by the Commission's accountants. . . .

It is with full appreciation of the patient coöperation of the great majority of operators, the honesty and the accuracy of whose cost reports are not open to question, that the Commission is able to point out that the costs of from 90 to 95 per cent of the tonnage reported could be accepted as substantially correct. Certain revisions were found necessary, however. Sometimes they operated to reduce costs, and at other times they increased them. As will be seen from an examination of the tables and charts appearing in this report, showing a comparison of "claimed" and "revised" costs, the revision made by the Commission had little appreciable effect on the costs shown. Most of the revision occurs under "General expense," where most of the inflation was found.

In considering the question of the reliability of the information thus secured and presented, emphasis must be laid on the use to which it is to be put. It is possible, of course, that some operators have made intentionally dishonest reports. But it is not probable that many of them did so, nor that any appreciable amount of tonnage was thereby affected. It was the practice of the Coal Commission, as well as that of the Federal Trade Commission, to refer back to the operator for further information any reports containing figures which inspection indicated were open to question as to accuracy. Most of such cases contained obvious errors which were promptly corrected by the operator. There were very few instances where any dishonest intention on the operator's part could be reasonably assumed.

The real challenge to the accuracy of this cost information lies deeper than any intentional dishonesty. There can be little doubt that the reported figures accurately represent the figures on the books. The question is one of the differences in accounting practices followed by the different operators. That is a fundamental factor affecting the accuracy of all the cost information existing on the books.

Yet, for certain general purposes, the existing cost information is most valuable. To illustrate by a chemical analogy, there are used, for different purposes, chemicals which test 80, 90 or 95 per cent pure. I believe that for most commercial purposes an 80 per cent purity is acceptable. The same is true of this cost, sales realization, and margin information, especially if care is taken, when attempting to measure changes in conditions, to limit the observations to the same operators throughout the period compared. Used in that way, for example, changes in the margin may be very significant. But the comparison of margins of operators who have heavy investments in labor-saving equipment with those who have none, or the comparison of per ton margins for the same operators over a term of years, without taking into account also the changes that have taken place in the per ton costs, is likely to result in misleading deductions.

THE NEED OF ADEQUATE, IMPARTIAL AND CURRENT INFORMATION ON COSTS INVESTMENTS AND PROFITS IN THE COAL INDUSTRY

To those who look back on what has happened since 1916, the discussion here of the need of adequate, impartial, and current information on costs investments and profits of the coal industry—using that term now in its broadest sense to include all activities of production and distribution—may appear superfluous. Yet it must be remembered that no provision for the collection and distribution of such information by governmental agencies is yet in existence, at least unchallenged by Court Injunction, and that, during the last Congress, in the face of all that has happened since 1916, two bills that specifically provided for such activities failed to become law. One of the chief recommendations of the U. S. Coal Commission calls for such governmental activity and publicity.

It is not my purpose to recall former controversies unnecessarily, nor to fight over the old battles. I do wish, however, to bring before your attention certain aspects of the subject that may not be generally known.

The subject of the need for collecting and distributing such information, through governmental agencies, first came to my attention in 1916. In that year the Federal Trade Commission was directed by a Senate Resolution (introduced by Senator Hitchcock) passed June 22, to make an investigation into the operations and accounts of the leading companies producing anthracite coal, to ascertain and report the facts concerning the recent increase in the price of anthracite coal, and to show the relation between the cost of labor, and the price of anthracite coal, prior to the increase, and subsequent thereto. About two months later, a House Resolution (introduced by Congressman Rainey, and adopted August 18) instructed the Federal Trade Commission to investigate the conditions in the bituminous coal industry, which, according to the preamble of the resolution, was alleged to be financially demoralized, with wasteful methods of mining resulting in the permanent loss of millions of tons of coal, unfair competition, and with 500,000 employes at the mines kept idle from one fourth to one third of the working time, with much ensuing hardship and loss to themselves, and those dependent on them. This investigation was directed on the ground that such conditions, if existing in the bituminous industry, vitally touch the interests and welfare of the public as a whole.

Much of the language of both the foregoing resolutions seems familiar and up-to-date, although so many things have happened to the coal industry since 1916. It is no state secret that, while the anthracite operators did not bestir themselves to persuade Senators to pass the Hitchcock resolution, that the passage of the Rainey resolution was advocated by prominent bituminous operators' associations. Under auspices of this kind, the Federal Trade Commission began its inquiries into the cost of production, sales realizations, investments and profits.

It is also of some interest to note that in 1916 the suggestion was made to the Federal Trade Commission by more than one operator's association, that the Commission use its legal powers to require periodically reports from the operators, in order to force, through this means, the establishment of better cost-accounting methods throughout the industry. The Federal Trade Commission, however, decided against such a step. It was not until a year later, in war-time, at the request of the Fuel Administrator,

that the collection of monthly reports on the cost of production, etc., was begun. And then, in the face of all the war-time difficulties, many operators had to install, for the first time, accounting systems that would furnish the information required for price regulation.

This is not to be a detailed history of the past seven years. Therefore I will merely mention that in the fall of 1916 there was a severe buyers' panic in the principal anthracite coal-consuming centers, which led to the first investigation by the Federal Trade Commission of marketing conditions. Also, that the information which had been gathered pursuant to the Hitchcock resolution was used in behalf of the consuming public, in March, 1917, to ward off a threatened general rise in the price of anthracite coal, on the alleged ground that costs had increased, when, as a matter of fact, up to that time, they had not done so. Those interested in all this past history will find it set forth in detail in various Federal Trade Commission reports, and in testimony given before Senate Investigation Committees. Also I will merely recall to your minds the situation that existed in bituminous coal, when, in the spring of 1917, the large consumers of that kind of coal attempted to make their usual yearly contracts, and were confronted with prices double and treble what they had paid during the past year.

Through all the hectic period from April 1 to August 21, when the President promulgated the first official maximum prices for bituminous coal, under the Lever Act, and established the U. S. Fuel Administration to regulate the whole coal industry, the lack of definite, impartial, current information, especially that relating to production costs, sales realizations and margins was dearly paid for. Panic conditions prevailed among the buyers, the railroads, public utilities, and municipalities were adversely affected, and the force of public opinion swung to the position that the Government should be given ample power to use strong-arm methods in dealing with the situation. Meanwhile, by direction of the President, the Federal Trade Commission was collecting cost information from the books of the operators who supplied the Navy with coal, and at the request of state authorities in Indiana and Illinois, its agents were collecting cost information from the books of operators in those states. Finally, at a few hours' notice, a situation developed which made it necessary for the President to act at once under the powers of the Lever Act, to fix maximum prices for uncontracted coal, and to set up an agency for regulating the industry. It was to the Federal Trade Commission that he turned for information on costs on which to base his prices. Under his personal direction, it became my duty to prepare, at very short notice, the list of prices which he promulgated on August 21.

The general storm of disapproval which burst from both consumers and operators is now only a memory. The consumers protested because the prices were so far in excess of what they had paid in 1916; the operators claimed that the prices were so ruinously low that the mines would have to shut down. I believe that much of the protest was made in good faith by both sides, because there was no definite, impartial and current information available to them to show what was really the situation at that time. By good fortune, there was available to me for the price fixing good typical costs from every important field east of the Mississippi. West of that river I had been unable to get much in the

way of sample costs. Such students as may be interested in arriving at a judgment as to how far the prices were adequate to meet the situation will find material bearing on the subject in Diagram No. 100, of the report of the Engineers' Committee of the Fuel Administration, in Dr. Garfield's testimony before various Senate Committees as to the amount of the price revisions subsequently authorized by him from the original prices, when more adequate information later became available, and in the detailed analyses of the costs, sales realizations and margins, by fields, contained in the six Federal Trade Commission cost reports that deal with bituminous coal.

All of the foregoing, as I have said, is all ancient history now. What I wish to impress on you, however, is the vital need, at such a crisis, of adequate current information. Actions that are taken in an emergency must be governed by the information at hand. And once taken, the decisions thus made, even on admittedly insufficient information, and intended as merely temporary expedients, sometimes become so rooted that they long survive the reason for their existence. One such "rudimentary vestige" was the seventy-five cent differential long upheld between the selling prices of the so-called "Company" anthracite coal, and that of the "Independent Operators" (as the operators not affiliated with railroad interests are sometimes called). Another case is that of the jobber's charge for selling bituminous coal originally fixed, on August 23, 1917 at fifteen cents a ton.

I am going to assume that your memory of what happened during the bituminous coal strike of November, 1919, is still fairly good. The following testimony, given by Mr. Ogle, a prominent Indiana operator, before the Frelinghuysen Committee on December 19, 1919, may, however, be new to many of you. Mr. Ogle was being questioned by Senator Townsend, at this point of the hearing.

Senator Townsend. You consent to an increase of 14 per cent in the wages, consent to absorb it out of your price, do you?

Mr. Ogle. We accepted Dr. Garfield's proposal, or suggestion, as he prefers to term it. In our letter of acceptance, Senator, we pointed out that there were no statistics available at the present time to indicate what our margin of profit was; that is, the average margin of profit over the country. Up to January 1, 1919, complete statistics were gathered through the Federal Trade Commission, and it was on those statistics, which were turned over to the Fuel Administrator, that the Fuel Administrator fixed the price of coal. Now, the Fuel Administrator has no statistics, we have none, and nobody in the country has them. It is our opinion that the industry cannot absorb this 14 per cent advance without advancing the price of coal. However, in this emergency, we felt that we did not wish to quibble over the question. We felt that if we were right in our belief that we could not absorb this increased cost, that we could make our case and prove it to the public. If we were wrong and could not prove it, then we were not entitled to any advance.

* * *

Senator Townsend. It has been suggested by the chairman of this subcommittee that the Government ought to establish some bureau or some department having for its object the investigation and study of all these questions. Do you think that would be desirable?

Mr. Ogle. Yes, I do. I think it would be desirable to have such a bureau and have it compile complete statistics on all these questions of miners' earnings and costs and working conditions in the different fields. If such statistics had been available at this time, no doubt we could have reached an agreement in a more orderly and proper way.

In January of 1920 the Federal

Trade Commission resumed the collection of cost of production reports along the same general lines that it used in 1918. This activity, in consequence of the situation brought about as a result of the Court Injunction granted against the Commission in the Maynard suit, was stopped, after it was evident that insufficient reports were not furnished voluntarily to permit of representative figures. That the present sentiment among some of the operators has undergone a change from its former position, is evident from the following extract taken from a statement made July 30, 1923, to the Coal Commission, by the Chairman of the Bituminous Operators' Special Committee:

> The investigations which your Commission has been conducting during the past winter into the costs and earnings of operators and miners in the bituminous industry, and the work of my Committee in assisting in that investigation and in the compilation of its results, have brought home to the Committee the value to the industry of having these facts compiled regularly, and made known to the public. We believe that if the public is regularly informed of the business facts of the bituminous coal industry, misconceptions can be ended, and the support of the public for the industry can be secured. Accordingly, I was authorized by a vote of my Committee to inform your Honorable Body that it is prepared to take up with you a plan for the voluntary publicity, through some existing governmental agency, such as the Department of the Interior, or the Department of Commerce, of facts as to costs and earnings of the industry and the wage earnings of miners and other vital information concerning the industry; this information to be compiled and published in such a way as not to reveal to competitors the facts as to particular companies.
>
> From inquiries which we have already made, we believe that the support of the industry generally can be secured for such a system, and that a sufficiently large percentage of the operators of the country will unite in it to make the compilation of these statistics thoroughly and accurately representative of the industry.

The events of the buyers' panic of 1920, and of the crisis that developed in 1922, with the five-months' strike, are too recent to need recalling. In each emergency there has been an urgent need for current and impartial information, either for a basis of governmental action, or to enlighten the general public as to the essential facts, that a just public opinion can be formed on the merits of the question, and brought to bear on its solution. On the last page of the recent report of the Coal Commission, my conclusions were summed up as follows:

> The wide differences in the accounting methods followed by the operators makes the collection of adequate figures of cost, investment, income and profits a matter of great difficulty. It places excessive burdens both on the operators and the agency that collects and compiles the information. The unavoidable delay in getting and making it available for use is often very costly to the public interest, where such information is needed to avert a crisis. Many of these difficulties and delays would be avoided if the Federal Government or the state of Pennsylvania (in the case of anthracite operators) should establish a prescribed system of accounting, compulsory on all operators in the industry. Such a system should be carefully designed to secure sufficient and comparable information, while being at the same time flexible enough to take care of the widely different conditions of the various operators. The establishment of prescribed systems of accounting is not a new departure in governmental activities. For years past, railroads, pipe-lines and express companies have been obliged to keep their books in accordance with accounting methods prescribed by the Interstate Commerce Commission. Banks subject to the Federal banking laws have had to follow prescribed accounting methods. There are, also, state and municipal regula-

tions prescribing the form of accounting to be followed by various public utilities, banks, insurance companies, and other forms of business closely connected with the public interest. If adequate information on income, costs, investment, profits, etc., is to be collected regularly from operators by any governmental agency, it will first be necessary to establish an adequate system of accounting.

Substitutes for Anthracite as a Domestic Fuel, With Some Remarks on the Purchase of Coal by Industrial Users

By F. R. Wadleigh
Formerly Chief, Coal Division, U. S. Department of Commerce

THE events of the past year, as regards our fuel supplies, have brought into prominence to an unusual extent the importance and necessity of considering carefully the question of fuel for house-heating, with especial reference to a diversity of such fuels, so that we may not be dependent upon, in the Eastern states, the anthracite, which many had grown to consider a necessity and the only fuel that could be satisfactorily used for the purpose.

Anthracite

The present prices of anthracite can only be justified, if at all, on the basis of the high cost of production and distribution; they are uneconomic and out of proportion to other raw material costs, including those of bituminous coals. They cannot be based on comparative heating values, as good bituminous coal contains about 10 per cent greater heating value than the best anthracite and necessarily has a much lower ash content. But the good qualities of anthracite, its absolutely smokeless combustion, cleanliness, and the ease with which it may be regulated, have made it *the* household fuel of the Eastern states.

Now, however, its high price and the fact that production has probably reached its peak, tend to make it more and more a "luxury" fuel, unless indeed the anthracite interests are, or become able to reduce production cost and lower their prices.

I will not discuss production or distribution costs—they apply equally to bituminous coal—nor rail freight rates. It would be obviously improper for me to discuss the latter, as the Interstate Commerce Commission is now holding hearings to determine the reasonableness of the rates in effect and their findings and decision should settle that question. But the importance to the public of a knowledge of the fuels that can be used in the place of anthracite for heating our homes and places of business is fully recognized, and it is my intention to supply such knowledge for the use and benefit of the consumer —what such fuels are—their source—availability—their character, methods of use, etc.

The value of an accurate and definite knowledge of the domestic fuel problem is becoming more understood by the public, but there is still a lack of exact knowledge on the subject. For this the consumer is partly to blame, but the lack of coöperation and coördination in the coal industry, its failure, as an industry, to realize the importance, the necessity for acquainting and interesting the public with its workings and problems, have been the principal factor.

I think that it is entirely in place here to state the importance of the coal problem in a general way and without going into detail.

Some Phases of the Coal Industry

Apart from any other considerations, the production deficits of recent years have been of considerable value in

developing our reliance on coal and the need for some constructive action, whether voluntary or by legislation, that will eliminate the uneconomic and (to our national life) hurtful features of the industry, in mining, labor, transportation and distribution.

Numerous plans for accomplishing the desired results have been submitted during the past year by individuals and various associations; some of these plans have considerable merit and were based on the common welfare; many of them were partisan in nature and based on the standpoint of some particular group; others, well meant, showed a lack of knowledge, on the part of their authors, of the elemental features and factors underlying the coal industry.

In this country, the so-called "Coal Question" has been, until the last few years, considered of rather minor importance by the leaders in the economic and industrial world, as well as by the public generally.

Except on rare occasions, when inconvenienced by comparatively short strikes, coal had been easily procured at what seemed to be low prices, and the general public knew little about coal economics or problems. In fact, the amount of ignorance and lack of interest as regards coal, on the part of users generally and the press, was astounding; it still persists, but to a much less extent.

To the World War, responsible for so many new conditions and changes of viewpoint, is also due the awakening of a greater interest in coal and a clearer realization of its great importance in our economic, social and political life, today apparent in every quarter.

THE COAL QUESTION

In 1865 Professor Jevons published his classic, *The Coal Question*, which passed through three editions, the last in 1906, revised by Professor Flux. While in need of another revision to bring it up to date, this book is of great value to the coal economist and a study of it is strongly recommended to our modern makers of panaceas for the cure of the coal industry.

I quote the first three paragraphs from Dr. Jevons' book, the statements which may truly be said to apply, in large measure, to today's conditions:

> Day by day it becomes more evident that the coal we happily possess in excellent quality and abundance is the mainspring of modern material civilization. As the source of fire, it is the source at once of mechanical motion and of chemical change. Accordingly, it is the chief agent in almost every improvement or discovery in the arts which the present age brings forth. It is to us indispensable for domestic purposes, and it has of late years been found to yield a series of organic substances, which puzzle us by their complexity, please us by their beautiful colors, and serve us by their various utility.
>
> And as the source especially of steam and iron, coal is all-powerful. This age has been called the Iron Age, and it is true that iron is the material of most great novelties. By its strength, endurance, and wide range of qualities, this metal is fitted to be the fulcrum and lever of great works, while steam is the motive power. But coal alone can command in sufficient abundance either the iron or the steam; and coal, therefore, commands this age—the Age of Coal.
>
> Coal in truth stands not beside, but entirely above, all other commodities. It is the material source of the energy of the country—the universal aid—the factor in everything we do. With coal, almost any feat is possible or easy; without it we are thrown back into the laborious poverty of early times.

The coal question today is with us, as well as in other countries, a real one; while its problems are not altogether new, they are growing in complexity and pressing for solution more urgently than ever before.

LEGISLATION, COAL, 1922

The various problems of the industry were given a large amount of consideration by Congress in 1922, with the result that legislation was passed in September of that year; part of it with a view to immediate assistance in the distribution of coal; part of it looking to the future and its needs.

TRANSPORTATION

Transportation, in some shape, is the most influential and far-reaching factor in the coal industry.

Leaving out transportation from the mine-working places, where the coal is cut or mined, to the tipple or breaker, transportation influences every phase of the industry, as well as the consumer's interest; from production cost of coal to the cost of producing steam in the boilers, the cost of producing a ton of pig iron, the cost of keeping the house warm, the cost of illumination, the cost of transportation of passengers and commodities, all are affected by the transportation element. The miners' earnings, the profits or losses of the mine operator, the wholesaler and the retailer, all are dependent upon transportation.

Yet those engaged in the bituminous coal industry, as a separate industry, have not apparently realized the importance of transportation, or else have not coöperated to the fullest extent possible with the transportation interests, nor have the transportation interests always given coal traffic the treatment it should have, when we consider that it is the leading single commodity, the foremost essential in their operation; that our whole industrial machine, in its vast ramifications, has been built on a plentiful supply of cheap coal as its foundation.

This essential, coal, non-perishable and low-class traffic, is too often treated as in the same category as sand, gravel and other less essential commodities; in the past this has been quite clearly shown in the great difficulty encountered at various times in getting individual railroads to comply with priority orders issued for the movement of coal and the return of empty coal cars.

Is there any other industry that is in the position of having its car supply rationed; of being in a large measure absolutely dependent for daily operation upon the railroads, hardly knowing from day to day whether it can operate or not?

Yet coal traffic, apart from its volume, involves comparatively simple problems compared to other classes of commodities as regards its handling by the railroads; it requires less switching; it includes no expensive solicitation for business; damage and loss claims are low; coal cars are generally unloaded more quickly than those loaded with other commodities. In point of volume, coal traffic is preëminent and therefore its sales problems and markets should be thoroughly understood by the carriers, yet business intercourse between the carriers and the coal producer is too often limited to questions of car supply and movement of loads, and there is often a lack of close contact and coöperation between the industry and the carriers.

Here is a field that might well be cultivated by both interests, but the difficulty in bringing together the carriers as a body and the coal industry as a whole, is greatly increased by the lack of unity on the part of the latter. Had the coal industry a national body, as well organized and with the comprehensive functions and activities of the American Railway Association, that could work with the latter in all transportation matters, the interests of both would be signally advanced.

COAL STORAGE

Coal storage is today one of the important essential factors in our economic fuel situation. Its importance and significance has at last been recognized, both by the coal industry and the industrial consumer and to a lesser degree by the householder, especially from the standpoint of its effect on general transportation and industrial conditions. Never before in the peacetime history of the country have there been such seemingly enormous stocks of coal carried as at times during the past two years, which reached the maximum in March, 1922, just previous to the stoppage of work at the union bituminous and anthracite mines on April 1.

The U. S. Geological Survey, as the result of a stock-taking census in collaboration with the Bureau of the Census, reported that on March 1, 1922, there were 52,500,000 net tons of bituminous coal stored, not including that in the householders' bins; it was estimated that on April 1, this amount had increased to 75,000,000 net tons or 12,000,000 more than was reported in stocks on Armistice Day, in 1918. Since April, 1922, the country's stocks of bituminous coal have ranged from 22,000,000 on September 1, 1922, to 56,000,000 on September 1, 1923.

Yet with all of these vast amounts put in storage, our knowledge of the basic, economic facts and tendencies of coal storage is comparatively limited. There has never been made a comprehensive, systematic study of the coal storage question, all factors entering into it, the results leading from it and its possibilities in our industrial situation.

Up to this time coal storage studies and research have been chiefly devoted to the technical side and there is comparatively little accurate available information on the economic side, especially in its relation to transportation, freight rates and car supply; costs and financing; relation of consumption and production to storage.

PREPARATION OF COAL, ITS ECONOMIC ASPECT

A phase of the coal question of great importance to the consumer has been brought into unusual prominence by the occurrences of the past winter, particularly as regards coal for house-heating.

Yet, it is of vastly greater importance economically to the industrial user, to public utilities and the railroads; notwithstanding this fact (and that it is a fact will be admitted by engineers and users in the classes mentioned) there has been little constructive discussion of its features or problems, except on the technical side.

There have been numerous attempts by consumers, engineers and coal chemists, as well as by various Government departments and bureaus, to establish coal specifications as to quality and use, and establishing tentative standard specifications has been the work of a committee of the American Society for Testing Materials and of other technical and industrial organization; but standard methods of coal preparation, by which is meant the cleaning and sizing of coal, have not, in the bituminous coal industry, at least, been given the attention or thought that their importance deserves, especially in their relation to economic and transportation conditions.

Should the Government attempt to establish such standards or even study the matter, there would probably be an outcry against more Government interference in business. Yet the coal industry as an industry has never done anything in the way of investigation to improve preparation methods or de-

termine the best methods, probably because of the lack of coöperation in the industry, and of any really national body with the necessary authority and influence. It is a piece of work that should be done by the industry itself, perhaps in collaboration with the Federated American Engineering Societies and the only technical Government bureau fitted to handle the subject, the Bureau of Mines. This is not the place to discuss the technical and economic questions involved, but the importance of the subject and the value of a detailed study of its possibilities warrant immediate investigation on the part of both the producer and the consumer.

MARKETING OF COAL

There has been, in the last three years and especially during the winter just past, much severe criticism of the methods of coal distribution and marketing. It is uneconomical, badly handled, full of dishonesty, not up-to-date, needs supervision—these are a few of the terms that have been applied. It is no doubt true that there are weak links in the chain, sore spots, slip-shod ways, lack of efficient operation and misrepresentation, but, of what industry, large or small, cannot the same things be said with entire truth?

The fundamentals of marketing are the same in every industry, but each has its special problems. The recognized marketing of coal dates back to the 13th century; it was then a buy and sell proposition, as it is today; with development of transportation systems and methods, the greatest factor in changing marketing operations, a technique of coal salesmanship, of policies and practice, has been evolved, in effect uniformly throughout the industry.

Do today's coal marketing methods and practices merit the severe and often unqualified criticisms that have been spread abroad, principally by the prejudiced, the ignorant, or those with an axe to grind? I think not.

Methods that market each year from some half a billion tons or more of coal, with a value at point of production of about some $1,510,000,000 (1920), certainly would seem to have some well-substantiated claims to capacity and efficacy.

Coal marketing is intimately bound up with transportation and distribution problems, but there is another and important phase which is sometimes overlooked by economists and reformers of the industry, although its importance is well understood by most of those engaged in coal marketing and mining.

I refer to the utilization of coal, both as to the different uses to which it can be or is put and its actual combustion in boiler and other industrial furnaces and retorts.

In general, the more numerous the uses for which a coal can be used satisfactorily, the easier it will be to sell and the more markets it will command, while the adaptation of appliances to the use of certain coals that are comparatively cheap and plentiful may make an easy market for such coals even in sub-normal years. This is clearly shown in the case of Illinois screenings, millions of tons of which are now used at power plants, due to the introduction of the proper combustion equipment, while formerly it was almost impossible to find a market for them.

COAL FOR DOMESTIC USE

"The proper heating of the buildings in which we live and work is one of the most important problems of the day."

The hygienic aspect of heating has an important bearing on the well-being of the people, physical and mental, as well

as on economy in fuel consumption; it is largely because of this fact that, although the amount of coal used for domestic heating purposes amounts to only about 10 per cent of our production, it is one of the most troublesome problems in which the coal industry is involved.

Coal for domestic use concerns so many different individuals of all classes and descriptions, both as users and in its distribution, that it is a matter of concern to substantially the entire population of the country.

While its rail transportation problems do not differ in the main from those concerning coal for other uses, grading and sizing at the mines, marketing and local distribution of domestic coals, all place it in a different category and make the domestic or retail coal business a special branch of the industry.

There are also the questions entering into the selection of coal for domestic use; the kind and description most suitable and available for different localities; their analysis, involving the amount of ash and volatile matter; their heating value; their physical structure, which involves their friability or breakage characteristics; their combustion qualities, whether coking or non-coking, whether they require much or little draft, whether the ashes clinker or not. All of these items should be considered in the selection of coal for domestic use, in connection with the delivered cost and availability.

There is naturally considerable variability in the kinds of domestic coals used in different sections of the country. In New England and the Middle Atlantic states anthracite is principally used for domestic heating. Comparatively small amounts are also used in the Middle West states obtaining coal from the Lake docks and in the South. The consumption of anthracite has probably reached its maximum, as it is doubtful if today's production will ever be exceeded. The area underlain by the anthracite deposits is comparatively small and their exhaustion is in sight.

Bituminous coal of some description supplies by far the greatest tonnage for domestic heating, especially in the states west of the Ohio and in the South. Probably the largest tonnage of bituminous domestic coal is produced in Illinois, but the eastern Kentucky fields are also large shippers. The so-called smokeless bituminous coals of southern West Virginia, Pocahontas and New River are largely used for domestic heating in the states between the Ohio and the Mississippi and in those bordering on the Great Lakes, as these coals give out an intense heat, will burn for a long period with little attention and, when properly prepared, contain small amounts of ash. The low volatile coals of central Pennsylvania, in Somerset, Cambria and Clearfield Counties and of the Potomac region, northwest Virginia and Maryland are similar in character to those of southern West Virginia and are equally well adapted for domestic use, although not so high in heating value as are the Pocahontas and New River coals. The "splint" coals of West Virginia, Kentucky and Tennessee are also much in demand in the nearby states and in the South for domestic use, as they are hard and stand handling with but little breakage, ignite readily and make a hot, cheerful fire.

The experiences of last winter taught the consumer some much-needed lessons regarding the heating of houses and rooms; one of which was that he had been in the habit of burning more coal than was necessary; another, that good low volatile bituminous coals make excellent domestic fuel either

with or without sizing. Coke alone or a mixture of coke and the smaller sizes of anthracite or coke and soft coal were found to give good results. Many, under stress of necessity, found that the smaller and cheaper sizes of anthracite could be used satisfactorily. Since last winter, several devices for making use of the steam sizes of anthracite, especially No. 1 and 2 buckwheat, for house-heating, have been put on the market. A more extended use of these sizes would be economical and is to be recommended. In fact, the winter's happenings should make an appreciable saving per capita in our consumption of coal for domestic heating, although it may not be possible to put the saving into actual figures.

But with all of our knowledge and added experience, we are still far from economical in our use of coal for domestic heating and need more education and knowledge regarding the proper heating appliances and methods, as well as of the best fuel to be used and the best way to use it. Not only are we prone to use too much, but we do not get as much heat from the coal as is easily possible. For this, the user is not altogether or always to blame; often it is the fault of the heating equipment or of the chimney or fireplace; architects and makers of house-heating appliances have been largely responsible for the wasteful use of coal in our houses.

In any case, we need more education and knowledge regarding the proper heating appliances and methods, the fuel to be used and its efficient use. It is not the heat which we use that makes house-heating so expensive, but that which we waste; the generally low efficiency of house-heating appliances is due to the fact that they will only use a small amount of the heat that the consumer buys in the shape of coal or other fuel. For instance, experiments made at the University of London showed that in an ordinary coal range, not to exceed 3 per cent of the total heat in the coal is actually used.

Moreover, leaving out anthracite, the use of which in its natural state for domestic heating is logical and economic, in the nearby markets at least, the use of raw coal for house-heating is a practice that does not commend itself to economy, cleanliness or service; capable of yielding by proper treatment numerous products whose value is greatly in excess of its heating power, its use for heating is one of the great wastes of today.

ANTHRACITE

Forty-four states and the District of Columbia customarily share in the anthracite distribution, although some of the states receive only a negligible quantity of this fuel. In the coal year ended March 31, 1922, the latest normal year, only 19 of the states and the District of Columbia received more than 100,000 gross tons of anthracite each. Although substantial amounts were shipped to the states of Wisconsin, Minnesota, the Dakotas, Nebraska, Iowa, Missouri, Illinois, Indiana, Michigan and Ohio, the bulk of the anthracite produced is distributed to the northeast section of the United States, to the natural markets in closest proximity to the source of supply.

This year will probably witness the greatest rate of production of anthracite in the history of the industry, but it is also probable that the possible maximum has been about reached. It is distributed to the most densely populated sections of the country and to communities among the most industrious and intelligent in the country. Any interruption to production or distribution induces a prompt reaction on the part of the consuming public,

perhaps out of proportion to the relative amount of tonnage involved, but in quarters most capable of translating dissatisfaction into action deemed remedial, legislative or otherwise.

SOUTH WALES ANTHRACITE

The shortage of anthracite during the winter of 1922-23 led to the purchase of numerous cargoes of anthracite from South Wales. This coal was found to be, as it really is, superior to the Pennsylvania product in heating value and containing much less ash, although rather softer and more friable and somewhat higher in volatile matter and sulphur content.

Comparative analyses of the two anthracites are given below, taking the egg size of Pennsylvania anthracite and "machine-made" Welsh cobbles—the nearest corresponding sizes:

There are only about 70 collieries producing anthracite in South Wales (and most of these are comparatively small) as against about 342 in the Pennsylvania anthracite field, many of which are large producers.

Some 10 or 12 cargoes of Welsh coal presumably sold as anthracite have been shipped to this country during the last two months; it has been reported that the delivered price on this side is about $16.50 per gross ton—this for the *best* Big Vein anthracite cobbles.

It will be seen from the foregoing, therefore, that, while the Welsh anthracite is of excellent quality, the amount that can be shipped to this country is limited and is not likely to be much of a factor in the way of a substitute for the Pennsylvania product.

	PENNSYLVANIA	WELSH (BIG VEIN)	WELSH (RED VEIN)
Size	2½" to 3¼"	2¼" to 3½"	2¼" to 3½"
Moisture %	1 to 2	1.45 to 1.80	1.01 to 1.84
Volatile matter %	4 to 6	5.00 to 7.99	5.68 to 7.98
Fixed carbon %	80 to 83	86.00 to 90.42	85.82 to 86.97
Ash %	8 to 11	2.78 to 4.56	4.00 to 6.34
Sulphur %	0.7	0.75 to 1.86	1.56 to 1.99
B.t.u. dry	13,268 to 13,500	14,294 to 14,558	14,143 to 14,397

The foregoing shows the superiority in heating value of the South Wales anthracite. But the amount available for export to this country is limited and at most could take care of only a small portion of the domestic consumption in our Eastern states, as the South Wales anthracite field is small in area and the annual production has never exceeded 4,833,000 gross tons (1913). Approximately one half of the production is shipped normally to other European countries, principally France, Italy, Switzerland and the Scandinavian countries.

It should be noted here that, during last winter, a number of cargoes of the Welsh "dry" coals were shipped to this country as anthracite and sold here as such. These coals, while high in heating value and low in ash content, are *not* anthracite; they are softer, higher in volatile matter and must be fired in a different manner. Moreover, they are not screened to any sizes between nut and the large lumps and are sold at a lower price than the true Welsh anthracite. The present price of the best washed nuts of the "dry" coals f.o.b. Swansea is about

34/; the large "dry" coals, 28/, and the anthracite cobbles (egg size), 55/ to 60/, and nuts, 60/ to 62/.

The following table shows the total imports into the United States of both anthracite and bituminous coals from Great Britain during 1922 and nine months of 1923:

UNITED STATES IMPORTS OF ANTHRACITE AND BITUMINOUS COAL FROM THE UNITED KINGDOM

By months for 1922 and 1923 to date

Gross Tons

	ANTHRACITE					
	1922			1923		
	England	Scotland	Total	England	Scotland	Total
Jan.	6	....	6	9,273	199	9,472
Feb.	6	....	6	91,427	7,800	99,227
Mar.	5	....	5	32,343	....	32,343
Apr.	1,302	....	1,302	9,489	4,753	14,242
May	1	....	1	4,755	....	4,755
June	....	....	....	5,488	....	5,488
July	3,998	....	3,998	4,202	....	4,202
Aug.	30,772	....	30,772	....	....	....
Sept.	17,027	....	17,027	7,182	....	7,182
Oct.	90,230	....	90,230	*	*	*
Nov.	11,737	....	11,737	*	*	*
Dec.	25,914	....	25,914	*	*	*
Total	180,998	....	180,988	164,159	12,752	176,911

	BITUMINOUS					
	1922			1923		
	England	Scotland	Total	England	Scotland	Total
Jan.	11,023	6,002	17,025	94,653	47,696	142,349
Feb.	5,294	997	6,291	161,673	28,782	190,455
Mar.	3,600	500	4,100	130,264	7,424	137,688
Apr.	15,095	1,000	16,095	62,281	502	62,783
May	7,463	200	7,663	9,595	....	9,595
June	3,889	....	3,889	10,207	....	10,207
July	6,066	....	6,066	4,945	....	4,945
Aug.	465,078	40,972	506,050	398	....	398
Sept.	904,941	94,286	999,227	....	....	....
Oct.	824,273	132,639	956,912	*	*	*
Nov.	172,254	52,758	225,012	*	*	*
Dec.	108,964	79,391	188,355	*	*	*
Total	2,527,940	408,745	2,936,685	474,016	84,404	558,420

* Not available.

SEMI-ANTHRACITE

The semi-anthracite coals of Arkansas, New Mexico and Colorado will not be considered at this time, nor will the possibilities of carbonization of lignite developed to a commercial possibility by the U. S. Bureau of Mines.

East of the Mississippi River, the only semi-anthracite field is that of Virginia. This fuel is produced in a small district, located in Montgomery and Pulaski and Wythe Counties. Two beds of coal are known, the upper, or "Big Seam," ranging from 7 to 9 feet in thickness and the lower, or "Little Seam," from 2 to 3 feet in thickness. Production, which dates back to Revolutionary times, is limited and in the past sufficient for local trade. The developments of the past year, however, have brought this fuel into considerable prominence and it is understood that its production will be considerably increased in the near future. The coal is smokeless in combustion and compares quite favorably with the Pennsylvania anthracite, when properly prepared.

SEMI-BITUMINOUS AND BITUMINOUS COAL (SOFT COALS)

The bituminous coal resources and production capacity are so large, as compared with anthracite, that as the supply of the latter becomes exhausted we must look more and more to bituminous coal—either as produced or processed—to supply our domestic demands.

Bituminous coal (using the classification of the ordinary consumer) occurs in a practically endless variety, ranging from the high grade low volatile semi-bituminous or "smokeless" coals of the East, through the various medium and high volatile true

RANGE OF ANALYSES, PENNSYLVANIA ANTHRACITE COALS, AS SHIPPED

	ASH PER CENT	FIXED CARBON PER CENT	VOLATILE MATTER PER CENT	MOISTURE PER CENT	SULPHUR PER CENT	AS REC'D B.T.U.
Broken	7–10	81–84	4 to 6	1 to 2	0.7	13,928
Egg	8–11	80–83	4 to 6	1 to 2	0.7	13,268
Stove	9–12	79–81	4 to 6	1 to 2	0.7	13,084
Nut	10–13	77–80	4 to 6	3 to 4	0.7	12,988
Pea	13–15	76–78	4 to 6	3 to 4	0.7	12,637
Buckwheat No. 1	16–20	71–75	4 to 6	3 to 4	0.7	12,099
Buckwheat No. 2	18–22	69–73	4 to 6	3 to 4	0.7	....
Buckwheat No. 3	20–25	66–71	4 to 6	4 to 6	0.7	....

SEMI-BITUMINOUS, LOW VOLATILE COALS

(Ash-fusing point, 2,600–3,000° F.)

NOTE: The ash-fusing temperature is a measure of tendency to clinker.

PRODUCTION FIELD	PER CENT ASH	PER CENT FIXED CARBON	PER CENT VOLATILE MATTER	PER CENT MOISTURE	PER CENT SULPHUR	B.T.U. PER POUND
Pocahontas, W. Va. New River, W. Va.	5–8	79–64 (2,200–2,900° F.)	16–25	1–3	0.5–1.25	14,400–15,000
Central Pennsylvania	6–11	78–61 (2,200–2,900° F.)	15–25	1–3	0.7–2.5	13,500–14,600
Northern West Virginia and Maryland	7–12	77–60 (2,400–3,000° F.)	15–25	1–3	0.7–2.5	13,400–14,500

(Ash-fusing point, 2,400–3,000° F.)

bituminous coals to the high moisture, high volatile sub-bituminous coals of the West. All these coals can be and are used as domestic fuel, but their desirability for that purpose varies with the ease with which they can be handled and their cleanliness and the degree to which they cause smoke and soot (Serial No. 2520, U. S. Bureau of Mines).

SEMI-BITUMINOUS, LOW VOLATILE COALS

The low volatile, semi-bituminous coals differ from Pennsylvania anthracite in chemical characteristics and physical structure, as well as in their combustion properties.

The difference in chemical characteristics can best be shown by comparing the ranges of analyses as shown by the tables on preceding page.

Physical structure is very different—the semi-bituminous coals are rather soft, friable, with columnar structure; anthracite is hard, dull to bright in color, of conchoidal fracture.

Differences as regards house-heating, between the two coals, may be summarized as follows:

For domestic heating, their value is great and it is probable that they will be used more and more for this purpose, especially in the East, with the increasing price of domestic anthracite. They can be burned in practically any type of heating plant, or furnace, ranges or open grates and in stoves; they are practically smokeless when properly handled and their strong coking quality gives them an added value for holding fire and not burning out quickly.

Owing to their physical structure and consequent friability, they are not suitable where a hard lumpy coal is desired, although this is largely a matter of custom and knowledge of how to handle them; the slack or screenings from these coals is generally freer from impurities than is the case with the slack from high volatile coals and, to a much greater degree, the small (steam) sizes of anthracite.

Comments of Leading Operators on the Substitution of Semi-Bituminous, Low Volatile Coal for Anthracite

Twenty-five years ago . . . I ran my furnace in my house on Pocahontas

SEMI-BITUMINOUS, LOW VOLATILE

Advantages	*Disadvantages*
Lower cost per ton.	Not so clean in handling.
Lower cost per B.t.u.	More smoke.
Greater availability.	Requires more attention in *some equipment* (this is a matter of handling).
Higher heat value.	More dust.
Lower ash content.	
Responds more quickly to change in drafts.	
Few extraneous impurities, slate, bone, etc.	
Will hold fire longer on account of coking quality.	
Less clinkers.	

ANTHRACITE

Advantages	*Disadvantages*
Cleanliness in handling.	High cost.
Smokelessness.	Difficulty in obtaining.
Steady heat.	Slower response to change in draft.
Easy control of fire.	Lower heat value.
	More ash and impurities.
	Loss in burning, through "chipping" in fire.

coal. It was an ordinary hot-air furnace, built presumably for anthracite, yet, without any change or alteration, I was able to use Pocahontas coal and . . . I effected a considerable saving as well as securing greater elasticity in the work of my furnace, whereby I could get a high heat very quickly and then could choke it off without firing for a long time. I remember as an experiment in a period of mild weather I banked my fire in the furnace and held the fire for three days without giving it any additional coal, something that would be entirely impossible with anthracite.

I would say that no crisis similar to the one of a year ago can possibly exist by a strike September 1st confined to the anthracite fields. It is my belief that the shortage of anthracite a year ago called for the use of substitutes at that time, and we have felt that the very strong demand for our graded coal at high prices that has been prevalent all this year was because of repeated orders given to us by people who first used our coal for domestic purposes a year ago. An anthracite strike would not seriously affect people beyond the New England and Middle Atlantic states, and the supply of low volatile bituminous coal, not only from West Virginia but also from Pennsylvania, is now so ample that, while there might be a shortage of anthracite, there need be no shortage of reasonably good fuel at any time anywhere this winter, and I think the situation would be cared for in natural ways without stress or strain by the coal being shipped where it was most desired, as indicated by the market, and I do not think the prices of low volatile soft coal would become unduly high.

The natural substitute in New England is first, by-product coke; secondly, prepared smokeless coal; and thirdly, prepared high volatile coal.

The by-product coke can probably be transported the easiest on account of the fact that it is available in considerable quantities closer to the points of consumption than smokeless coal is. The quantity of by-product coke, however, available for domestic use, does not, of course, come anywhere near equaling the anthracite coal to be replaced.

Prepared smokeless coal would be available in Pennsylvania and West Virginia to the extent probably of a half million tons per month. This coal could be transported to New England all-rail from Pennsylvania and West Virginia without burdening the transportation systems. The movement of smokeless prepared coal to New England would be all-rail; as of course no smokeless prepared ought to be shipped by water, as it would result in completely breaking up the prepared sizes.

I believe if New England will substitute for anthracite, Pocahontas and New River, Run-of-Mine through Hampton Roads, the present mine facilities will be practically sufficient to take care of the demand. This cannot be done, however, if the New England anthracite users expect to be furnished with Pocahontas and New River prepared coal, for the reason that the loading of prepared sizes will only run about 40 per cent of the Run-of-Mine production. Such a percentage of slack could not be absorbed by the by-product and allied industries, hence to obtain tonnage it would be preferable for New England to take mine-run as a substitute instead of prepared sizes. Other than this, mine-run would handle better at Hampton Roads as well as discharge at New England ports than prepared sizes.

There will be, however, a certain amount of prepared coal made from the slack absorbed in by-product plants, and such prepared sizes could be utilized in the Middle Atlantic states, all-rail, reaching the trade in the original cars rather than letting the prepared coal go to tidewater where it would necessarily sustain more or less degradation.

I do not believe for a moment that you could afford to send prepared coal to tidewater and have it broken up in loading and again in discharging and again in handling it from the retail yards, but I do think that a considerable tonnage could be arranged for by you to be shipped *all-rail* into New England, consigned to first-class retail dealers at various points.

I also believe that many of the office buildings can be supplied with Run-of-Mine coal without difficulty. It would seem wise, therefore to obtain a through rate from the mines to the cities in the New England and Middle Atlantic states as promptly as possible, so that you would be in shape to start shipping immediately the emergency arises.

As you are aware, prepared Pocahontas and New River is being very largely used in the West and to the Lakes, and if the emergency should arise, it would be necessary for more mines to go on a prepared coal basis in order to furnish the extra coal required for your purpose.

More mines in New River and Pocahontas are now equipped with screening arrangements than ever before. Modern mining methods, . . . are giving operators a better percentage of screened coal than ever before. Transportation conditions are apparently in better shape than ever before for moving New River and Pocahontas prepared coal into New England and the Middle Atlantic states. The greatest trouble would be disposition for the slack coal.

It is surprising how many consumers, especially in the Middle West, who at one time thought they could use nothing but anthracite, are now using New River and Pocahontas with the most satisfactory results. In fact, it is truly wonderful how many homes are now using New River and Pocahontas mine-run who for years thought they could use nothing but anthracite.

Should the New England consumer insist on having the screened sizes the situation would become much more difficult. In the first place, the excess slack would have to be disposed of; next, the question of dumping over the piers would have to be considered. You understand the handling at Hampton Roads is not intended for the handling of lump and egg—the breakage would be very severe; in fact, lump and egg through Hampton Roads terminals would not reach destination in much better condition than would Run-of-Mine. Of course, it might be said that coal is handled via vessels on the Great Lakes, but the machines at the lower docks are constructed for the purpose of reducing the breakage of the graded sizes. The coal feeds from railroad cars on a sheet-iron apron into a telescopic chute and the chute when once filled is kept filled, and thereby a great deal of breakage avoided. However, even on the Lakes I understand the docks figure about 40 per cent degradation.

I am morally certain that if our friends in New England and along our coast once get a taste of our high-grade domestic fuels, many of them would never go back to the use of anthracite coal. Indeed, I believe that if they could be educated to understand the virtues of mine-run they would be content with that grade in the absence of the prepared sizes, especially if the mine-run were delivered to them in the lumpy condition it comes from the mines and not all broken up into slack as a result of the . . . handling it gets at Hampton Roads.

In the above, I have considered only shipment by tidewater. All-rail coal can be put up to the Northeastern states through the Hagerstown and Washington gateways in heavy volume, and, of course, domestic sizes transported this way will not be subject to the degradation they are at tidewater. The "fly in the ointment" here is the ability of the railways to handle the traffic. North of the junction points there should be no trouble, because such roads would be able to take bituminous coal and handle it promptly because of having no anthracite, but our southern railroads should have substantial help. A full car supply should be assured, and this ought to be possible in view of the use we might have of cars otherwise employed in transporting anthracite. Locomotives, too, might be loaned to our southern roads if they be needed for much the same reason. However, rail facilities should be conserved to the greatest extent possible by making use of water routes wherever and whenever possible.

It is my belief, based upon personal experience and the experience of others, that smokeless coal, by which I mean New River or Pocahontas, and, in fact, coking

coals, higher in volatile matter, can be satisfactorily substituted for anthracite with respect to heating efficiency and economy of consumption. The particular consideration is careful regulation of drafts to control the rate of combustion. At this point, let me suggest the importance of having simple printed instructions for using bituminous coal delivered to users along with the coal. I believe that the mine-run cars can be used with as good success as prepared sizes. This statement is also based upon personal experience. There is one type of coal burner, called a Latrobe, designed for anthracite only, in which it is supposed that bituminous coal cannot be burned. I lived in a house equipped with this type of heater, and, upon removing the self-feeding magazines, I used New River mine-run with complete success for two winters.

The per cent production of smokeless coal, omitting Tug River District, is around 600,000 tons per week, of which prepared sizes are considerably less than 100,000 tons. If the prepared sizes, that is, lump, egg, nut and pea, should be produced in sufficient quantities, it would be necessary to make all-rail deliveries to avoid reducing the coal to a mine-run basis by handling over the piers.

Householders for use in furnaces should have more or less lumpy coal, and it is a problem how to deliver in New England lumpy New River and Pocahontas coals. There has been a good deal of discussion on this subject—two or three different handlers have in the past tried the experiment of shipping by water a cargo of lump and egg coal and they testify that, by the time this grade of coal is delivered in their yards, there are very few lumps left. In other words, these coals are rich and friable and easily break up in handling, and the many times the coal is dumped from the time it is loaded in the cars at the mines until it is delivered in the dealers' yards, results in very badly breaking up the coal. Therefore, it seems impracticable to ship lump and egg coal from West Virginia to New England via water.

As you doubtless know, the New England householder is very much opposed to using soft coal. Notwithstanding the very excellent work done by the Massachusetts Fuel Distributors, I do not think the view of the householder has been very much changed, and it is my belief in talking with various dealers that the average householder will wait until it gets considerably cooler, or even cold before consenting to take in bituminous coal. This seems to us very foolish; nevertheless, we believe it is the case.

Apartment houses, office buildings, etc., having steam plants, can use Run-of-Mine coal and, as a matter of fact, are using bituminous coals. For a long time, it has seemed to us that, if lumpy coal could be delivered to householders, very many of them would be well satisfied with the results, but the great problem is how to deliver lumpy smokeless coal here in New England.

The large majority of the consuming public can use mine-run coal to as good advantages as they can prepared coal and at less cost to the consumer. This will hold good especially where furnaces are in use. If transportation does not fall down, I honestly believe that there will be no great need throughout the country, or any reasons for extremely high prices. As you know, at the present time the market is not affording a price sufficient to cover costs, and a great many of our operations are suffering because of this condition. We are making arrangements through our traffic departments for getting coal through to New Jersey and New York interior points and, while the freight rate is excessive, yet coal can be put into those sections all-rail at considerably less than anthracite coal. For New England distribution can be made from the Atlantic ports into the interior country without any trouble.

BITUMINOUS COALS

Bituminous coal of some kind or description is, after all, *the* domestic fuel of the country. From the medium volatile coals of Pennsylvania and Alabama, to the high volatile product of Indiana and Illinois and of the states

west of the Mississippi, they are in common use for house-heating, to an amount greater than all other kinds of coal, anthracite, semi-anthracite or semi-bituminous, owing largely to their wide availability, as they are found in practically every coal-producing state.

There are, of course, many different varieties of bituminous coals, with varying physical and chemical characteristics, the use of each variety being largely dependent upon markets available, cost and heating value, as well as on their varying degrees of hardness and combustion qualities. They are usually much harder than the semi-bituminous coals and hence can be screened into more sizes and handled with less breakage; they make, of course, more smoke and soot than do the low volatile semi-bituminous coals. Some of these coals are non-coking and can be used in base-burners and hot blast stoves; others are strongly coking and require considerable attention. The best grades of these coals contain but little ash, probably less than any others, either anthracite, semi-bituminous or bituminous, and do not clinker.

COKE: OVEN

The use of coke as a domestic fuel is growing fast and its increased use is limited only by production; it is in many respects an ideal fuel for the purpose, smokeless, clean, and equal in heating value to good anthracite.

Coke is the solid residue left after the destructive distillation of coal. It is the result of either burning the coal with restricted air supply or subjecting it to high temperatures in closed retorts with no air admission.

Coke consists mainly of the carbon and ash of the coal from which it was made, with small amounts of volatile matter—generally less than 1 per cent in a good coke—which the temperature of the coking process failed to drive off.

CLASSIFICATION

Coke is usually classified according to its method of manufacture, into (a) beehive coke, made in beehive ovens, and (b) by-product coke, made in by-product ovens. According to the purpose for which it is used, coke is classed as (a) furnace, (b) foundry, and (c) domestic. If made in beehive ovens coke is also classed as 48-hour coke (for blast furnaces) and 72-hour or 96-hour coke (for foundry use), the number of hours referring to the time consumed in carbonization.

USES OF COKE

The principal uses of coke are: (1) In blast furnaces, foundries, and metallurgical furnaces as a fuel for melting the charge of ore or metal (which is by far the most important use); in 1918, of a total production of 56,478,000 tons, about 88 per cent was used in blast furnaces alone; (2) in the manufacture of water gas; (3) in certain high temperature and chemical manufacturing processes; (4) as a steam boiler fuel; (5) as a producer gas fuel; (6) as a domestic heating fuel, for which purpose its use is rapidly growing, as its good qualities become better known. Coke for domestic use may be either beehive or by-product, crushed and screened into various sizes, such as egg, stove, nut, etc.

COKING PROCESSES

The manufacture of coke in beehive ovens, in this country and elsewhere, has been one of the most wasteful processes known, not only in the actual loss of the coal consumed, but also in the loss of valuable by-products and their derivatives.

Fortunately, the use of beehive ovens is gradually decreasing and their complete disappearance will depend only on the life of the ovens now in use, as it

is highly improbable that any but by-product ovens will be built in the future.

The manufacture of by-product coke, so called because the gaseous products of carbonization are not wasted as in beehive-oven coking, but are carried off during the coking process and made use of, was begun in this country in 1892. The first ovens were of the Semet-Solvay type and were erected at Syracuse, New York.

The by-product oven is a closed retort, from 37 to 50 feet long, 10 to 12 feet high, and 16 to 20 inches wide. The retorts or coking chambers (heated externally by gas) are connected with pipes or "mains" to carry off the volatile matters as they are given off from the coal in the retort. There are several different types of by-product ovens in use in this country, the two most in use being the Semet-Solvay and the Koppers.

For each ton of coal coked, the beehive oven consumes 9,388,000 British thermal units or about 33.5 per cent of the heating value of the coal, while the by-product oven requires only 2,408,000 British thermal units or 8.6 per cent.

At a modern type plant the coke and by-product yields will be about as follows:

One short ton of coal will yield—	
Coke, 75 (pounds)	1,400– 1,500
Gas (cubic feet)	10,000–10,500
Tar (gallons)	7–9
Light oil (gallons)	2–4
Ammonium sulphate (pounds)	22–25

PRODUCTION

The production of beehive and by-product coke is shown in the following table. There was an increase in production of beehive coke in 1922 compared with 1921, particularly because of the demand for coke by the steel industry. The total, however, was far below that of the years prior to 1921 and shows the rapid decline of this branch of the industry, which is being replaced by the modern by-product oven coke.

Production of by-product coke increased 8,743,000 tons, or 44.3 per cent, in 1922 over 1921 and was only 2,340,000 tons less than the high production of 1920. A part of this coke was used as domestic fuel to replace anthracite coal and the remainder of the increase was due principally to

COMPARISON OF FUEL USED IN BEEHIVE AND BY-PRODUCT OVENS

COAL DERIVATIVES	FUEL VALUE	EQUIVALENT IN COAL
Coking one ton of good coal:		
Consumed in beehive oven—	B.t.u.	Pounds
Gas (11,00 cu. ft.)	6,160,000	440
Tar (9 gals.)	1,401,000	100
Light oils (4 gals.)	527,000	38
Coke (100 lbs.)	1,300,000	93
Total	9,388,000	671
Consumed in by-product oven—		
Gas (4,300 cu. ft.)	2,408,000	172

(Source: *The Journal of Industrial and Engineering Chemistry*, Jan., 1921.)

the increased demand of the steel industry.

Coke ignites as readily as anthracite, gas coke more so, and will yield a smaller *volume* of ash; it should be burned with a minimum of draft.

GAS COKE

Gas coke is a by-product in the manufacture of illuminating gas. It is denser and more friable than oven coke for these and other reasons; it is not suitable for metallurgical use.

It is, however, an excellent fuel for domestic heating; it ignites more readily than oven coke and burns faster. It is available locally in some quantity wherever there is a gas-making plant.

PETROLEUM COKE

Petroleum coke is the final product of the distillation of petroleum. It somewhat resembles gas coke in appearance, but breaks more easily; ignites more readily and is of great purity, usually containing less than .03 per cent of ash, with 5 to 10 per cent of volatile matter. Its principal use is probably in the manufacture of battery and electric carbons, but small amounts are available for domestic heating in certain localities, generally near the refineries.

BRIQUETTES

The briquette industry in this country is in its infancy, the total 1922 production having been only 619,425 tons. There are, however, eight plants in the Eastern states and at least two more will be in operation shortly.

PRODUCTION OF COKE IN THE UNITED STATES

(*Short Tons*)

YEARS	BEEHIVE	PER CENT OF TOTAL	BY-PRODUCT	PER CENT OF TOTAL	TOTAL
1913	33,584,830	72.5	12,714,700	27.5	46,299,530
1914	23,335,971	67.5	11,219,943	32.5	34,555,814
1915	27,508,255	66.2	14,072,895	33.8	41,581,150
1916	35,464,224	65.0	19,069,361	35.0	54,533,585
1917	33,167,548	59.6	22,439,280	40.4	55,606,828
1918	30,480,792	54.0	25,997,580	46.0	56,478,372
1919	19,042,936	43.1	25,137,621	56.9	44,180,557
1920	20,511,092	40.0	30,833,951	60.0	51,345,043
1921	5,538,042	21.9	19,749,580	78.1	25,287,622
1922	8,573,000	22.0	28,551,000	78.0	37,124,000
1923*	14,502,000	33.7	28,484,000	66.3	42,986,000

*First nine months.

(Source: U. S. Geological Survey)

Briquettes are at present made in this country from anthracite, semi-anthracite and the low volatile bituminous coals, with the addition of a small percentage, usually 6 to 8 per cent, of a "binder." Their heating value is quite equal, in some cases superior, to that of anthracite, depending upon the raw coal used. They make an excellent domestic fuel.

It is almost certain that the next few years will see a considerable increase in the United States production of briquettes, as their good qualities are becoming better known.

PULVERIZED COAL

"Highly pulverized coal dust when properly used is a most valuable fuel. It will probably in future displace all other kinds of fuel, both for domestic and industrial purposes."

The foregoing statement was made in 1920 by a well-known British authority, a specialist in heating engineering. Whether we agree with him unreservedly or not, there is no question that pulverized coal will undoubtedly come into extensive use as a fuel for domestic heating, especially in central heating plants, apartment houses and office buildings. At Seattle, pulverized coal has been for some time past delivered daily to small consumers in steel drums; at Terre Haute, Indiana, a similar enterprise was started last year.

WOOD

Where wood is plentiful and not too expensive, its use still continues, but in most localities it is an expensive luxury and used only in fireplaces, more for the purpose of adding cheerfulness to the room than for actual heating. The table below gives the relative heating values of wood and coal from which the cost of heating wood is computed.

PEAT

Peat has long been used in European countries, as well as in the Far East, as a fuel for heating. There has also been some development in the Western European countries in its use for power generators. Its use as a fuel in this country is as yet extremely limited and need hardly be considered here, as its availability would be confined to the region in which it is produced. Peat has a heating value of about one half that of coal, and it is estimated that the total supply contained in the peat bogs of the United States will reach approximately 15,360,000,000 tons.

ELECTRICITY FOR HEATING PURPOSES

Electricity in the form of heat is largely used in a variety of appliances and ways. Its use for heating buildings, however, comes under different conditions; its convenience, freedom from any kind of dirt and minimum fire danger, would make heating by electricity seem altogether desirable.

Installation costs are about the same

KIND OF WOOD	WEIGHT PER CORD IN POUNDS	HEATING VALUE B.T.U. PER TON	EQUIVALENT WEIGHT OF COAL OF 14,500 B.T.U.
Ash	3,520	5,450	1,420
Beech	3,250	5,400	1,300
Birch	2,880	5,580	1,190
Chestnut	2,350	5,400	940
Elm	2,350	5,400	940
Hemlock	1,220	6,410	580
Hard maple	3,310	5,460	1,340
Oak, live	3,850	5,460	1,560
Oak, white	3,850	5,400	1,540
Oak, red	3,310	5,460	1,340
Pine, white	1,920	6,830	970
Pine, yellow	2,130	6,660	1,050
Poplar	2,130	6,660	1,050
Spruce	1,920	6,830	970

as that of a hot-water system, and from the point of ease of control and convenience, nothing is left to be desired, but its use is too expensive for ordinary domestic heating, so that we may drop it from further consideration as a substitute for anthracite. This situation, however, must be understood to apply only to the present, as future developments may make electricity for this purpose feasible and desirable from a cost standpoint, as well as on the ground of convenience and cleanliness.

OIL

The application of oil to domestic heating is only in its infancy. The design of domestic equipment—which necessarily must be simple, fool-proof and inexpensive—apparently has presented a relatively more difficult problem than that for industrial purposes. This is particularly true of the small or domestic installations where but little skilled attendance is available. Many successful burners have been developed for household purposes, but most of them impress prospective purchasers as high-priced, although once installed the initial expense is soon forgotten in greater comfort and the enjoyment of many real advantages.

More than one million barrels of fuel oil are daily consumed in the United States in competition with bituminous and anthracite coal. The use of oil as a fuel in the East and Middle West has been largely extended during the past two years because of the strikes in the coal industry.

If the fuel oil is to be purchased on the calorific determination, a standard of 18,500 B.t.u. per pound of oil is a good figure as a basis. The calorific value of coal usually varies between 9,000 and 14,000 B.t.u. per pound according to the character of the coal; therefore, there is an increase of from 35 per cent to 50 per cent in the heating value of oil as compared with coal, weight for weight.

A complete oil-burning installation comprises in addition to the furnace and burner, a storage system and facilities for fillings; appurtenances such as oil heaters, oil, transfer pump; and for installations using air for atomization, low-pressure fans, blowers or compressers. (Address of Mr. Van H. Manning before International Fire Prevention Congress, October 13, 1923.)

With the present state of development of oil-burning equipment for domestic heaters, heavy low-priced fuel oil cannot be used in most of such systems, but only kerosene and a special light distillate. Kerosene is available practically everywhere, but the cheaper kerosene distillate only where a sufficient demand for it has been created. Although the supply is sufficient to fill present demands, should the use of such

ESTIMATED PRODUCTION CAPACITY OF THE PRINCIPAL SUBSTITUTES AVAILABLE FOR DOMESTIC HEATING, OTHER THAN THE BITUMINOUS COALS

Low volatile semi-bituminous:	
West Virginia—	
New River, prepared sizes	180,000 tons per month
Pocahontas, prepared sizes	400,000 " " "
Central Pennsylvania, prepared sizes	1,742,500 " " "
Total	2,322,500 " " "
Coke—Oven	300,000 tons per month
Gas	207,500 " " "
Total	507,500 " " "
Briquettes	619,425 net tons (1922 production)
Fuel oil, furnace oil and other distillates—	
Consumption, 365,000,000 barrels per annum.	
No figures available as to amount used for heating alone.	

oil-burning equipment become general, it would soon be entirely inadequate.

The cost of kerosene is high as compared with anthracite. Calculating on a heat-value basis, kerosene costs from one and a half times to twice as much as anthracite. Allowing for the possible economy which may be effected by increased efficiency of combustion in properly adjusted burners and by starting up and shutting off the furnace as needed instead of banking it as is necessary with a coal fire, the cost will still be in excess of anthracite. In addition, the cost of the installation must be considered.

However, such an oil-burning furnace can be operated with a minimum of attention, with entirely automatic regulation and without bother of ash-handling; advantages for which many are willing to pay the additional cost. (Bureau of Mines Serial No. 2520.)

The following are the results of a preliminary investigation made recently in Washington, covering the use of oil for domestic heating:

Oil is delivered to the householder by the Standard Oil Company at eleven cents a gallon in five-gallon lots; at ten cents a gallon in 250-gallon lots. It is known as furnace oil and is from 38 to 42 degrees Baume. The company believes the B.t.u. per pound is about 18,000, although this seems a little low. They are not in a position to deliver a heavier, cheaper oil for some of the better burners. One sales agency thought his company could place a heavier oil here in Washington at eight cents a gallon, but it would require considerable construction of oil tanks, etc. The householder is being urged to put in a large storage tank in order to buy ten-cent oil. The cost of tank installation is said to be $200. If 2,000 gallons were used during the heating season, which would carry the ordinary six-room house, a saving of $20 per year would be made by installing a tank. It would require, therefore, about fifteen years to pay for the tank.

Some relative cost data between coal and oil was roughly figured as follows: The cost of the vapor burner runs from $75 to $200. Say the burner lasts fifteen years. Simple interest at six per cent for fifteen years on $150—an average cost—equals $135; $150 plus $135 equals $285; $285 divided by 15 equals $19; or the cost of installation is about $20 a year extra.

The cost of the mechanical burners is about $600. They are said to last ten years. Six per cent for ten years on $600 equals $360; $960 divided by 10 equals $96; or the cost of installation raises the cost of the coal bill about $100 a year.

2,240 lbs. coal @ $16.00 equals 0.714¢ lb.
0.714 equals .057¢ per 1,000 B.t.u.
12,500 B.t.u.

1 gallon oil (8.33 x .825) equals 6.87 lbs.
6.87 lbs. oil @ 11¢ equals 1.60¢ lb.
1.60 equals .089¢ per 1,000 B.t.u.
18,000
.089

.057 equals 1.56, or about 1 to 1½

If the same proportion of the heat value of the oil and of the coal is put into the house, the oil cost would be 1½ times as great. However, there are several unknown factors entering the proposition; the closeness of control for variable weather; the comparative temperature of the flue gases; the efficiency of combustion; the extreme temperatures allowable over night, etc. Such factors could be arrived at only by study.

There is also the safety factor to be understood. Oil in quantities and oil gases in the cellar is a hazard that should be understood by the user.

It is reported that the consumption of fuel oil in New England increased from 101,501,100 gallons (equal to 615,158 net tons of coal) in 1918 to 674,271,000 gallons (equal to 4,086,491 net tons of coal) in 1922, but no figures are available as to the amount used for heating alone.

NATURAL GAS

While natural gas is an ideal fuel for domestic heating, its use is restricted to localities to which it can be piped from the gas-producing fields, and it

can only be considered as a substitute for anthracite in such localities.

MANUFACTURED GAS

The use of manufactured gas for heating is increasing, due to its cleanliness, efficiency, flexibility and convenience in handling. Gas companies in some of the large cities—notably New York, Chicago and Denver—after thorough investigation have started energetic campaigns looking to the increased use of gas for domestic heating.

Even here in staid old New York, where the business of manufacturing gas is necessarily almost as much a political as an engineering undertaking, the big Consolidated Gas Company is now advertising gas for house-heating purposes, and is telling the story forcibly with illustrations of houses belonging to satisfied consumers. If New York City can use gas for heating, surely there should be no difficulty in developing this field elsewhere, for practically the only important communities that have as high a rate as New York are the large cities in New England, where fuel is high due to the remoteness of the coal fields from this region. If there ever was a time when gas men should be optimistic, that moment is now. (F. W. Parsons, *Gas-Age Record*, September 22, 1923.)

The tendency in the gas industry, however, as evidenced at the recent convention of gas companies, is to go slowly in the matter. Equitable rate-making and universal adoption of the B.t.u. standard for gas, instead of the candle-power basis, are necessary before we are likely to see any great increase in the use of gas for heating.

GENERAL INFORMATION ON THE PURCHASE OF COAL

The Buyer

The coal buyer, whatever may be his title, is not capable of purchasing coal to the best advantage of his company unless he has a practical working knowledge of certain important items, summarized as follows:

1. Kind of coal.

The kind of coal best suited to the equipment and conditions under which it is to be used.

2. Prices.

The market prices of the coals available at his plant.

3. Analysis.

A knowledge of coal chemistry sufficient to enable him to know what the analysis of coal means and what it should tell him about coal offered.

4. Character and quality.

A knowledge of the character and quality of the coals that are sold in his market, so that he may be able to tell (1) which coal is suitable for his purpose (2) whether the seller is misrepresenting the character and quality of his coal, or not.

5. Source of coal.

He should know or ascertain the reliability of the seller and whether the mine or mines from which coal is offered are able to produce the kind and tonnage of coal so offered.

6. Transportation rates.

He should know the freight rates on all coals that are sold in his particular market.

7. Combustion and use.

He should have a sufficient knowledge of combustion, conditions of use and firing to be able to form an intelligent opinion as to whether coal is being properly handled at his plant or plants or on his railroads. In this connection it would be entirely advisable to consult his chief engineer, or the man who has direct charge of the use of the coal bought, as to the suitability of the various coals, results that are being obtained, etc.

8. Storage.

He should be well informed as to coal storage in general, cost of rehandling, storage methods, etc.

9. Plant consumption.

He should have accurate current knowledge of coal consumption and the results obtained in everyday use.

This may seem a rather formidable list of requirements for the coal buyer, but they are readily acquired and are necessary for the intelligent purchase of coal.

The lack of accurate elementary knowledge of coal on the part of both buyer and seller has often been commented upon and is pretty well known; nevertheless, few companies, either those mining and selling coal or those using coal, make any systematic effort to have either salesman or purchaser obtain accurate information regarding the substance they are handling.

Methods of Purchase

In general, there are two methods of purchasing coal:

1. On its name, general character and reputation, depending largely on the honesty and reliability of the seller.

2. By specification, based on analysis and heating value determination.

The first method, with various modifications, is the one in most general use today and probably will be for some time to come; it has weathered many storms of criticism and is capable of good service and results, under intelligent handling; it is also the refuge of the ignorant buyer, generally the smaller user. Under this plan, each buyer and seller has his own adaptation of purchase methods, but the items given in the foregoing suggested requirements, are quite as useful to both sides, no matter what method is adopted.

Purchase of Coal on a Specification Basis

The purchase of coal on a specification basis has been a practice of comparatively recent date. The first large contract for coal placed under this method was, as far as known, that of the Illinois Maintenance Company in 1902, for 20,000 tons on a B.t.u.-ash-moisture basis, but the Interboro Company of New York was probably the first large consumer to contract for all of its coal on a strictly specification basis, with premium and penalties, this company having put such a contract into effect about 1907.

In 1914, it was estimated that some ten or twelve million tons were bought in this country on specification, and the use of the method was growing, although there was also strong opposition to its use on the part of many coal operators and selling agencies. Since the beginning of the war, the use of this plan has been in a great measure discontinued, owing to conditions of supply and demand brought on by the war.

Advantages of the Specification Method of Purchase

There are few materials required in our manufacturing and carrying industries which are purchased on a large scale with such a neglect of common-sense rules and precaution, as fuels. The majority of our manufacturers still purchase fuel by this rule-of-thumb method, which satisfied the last generation. A user is not purchasing so many tons of a solid uniform composition, but should be purchasing so many units of heat in solid form, as a matter of convenience.

The principal arguments in favor of this system of coal purchase may be summed up as follows:

1. It places all sellers on a similar competitive basis as regards both quality and price.

2. It enables more sellers to compete by eliminating trade names and districts, thus broadening competition.

3. Systematic and current analyses of the coal used establish a standard for plant operation and consumption, giving more uniform results and generally effecting definite savings.

4. Mine operators are compelled to mine and prepare their coal with greater care.

5. Disputes as to the quality of coal are more readily obviated or adjusted.

6. Should inferior coal be received, the buyer pays only for such quality, while if a better grade than the standard called for be received, the seller gets a higher price.

7. An exact and definite basis for cancellation of contract is provided for.

8. By insuring coal of a uniform quality, boiler room work is made easier, and more skilful handling of the coal is possible.

9. Valuable and useful information as to coals and their actual quality is acquired by both buyer and seller.

10. The seller and miner of high-grade coals is enabled to secure a price commensurate with the value of his product.

11. The miner and seller of low-grade coals is given a chance to compete with the better fuels.

12. The adoption of better combustion methods often results, enabling a buyer to

use, in many cases, lower grades and cheaper coals.

Disadvantages of the Purchase of Coal on Specification Basis

1. The consumer may be made to pay more for his coal on account of increased mining and preparation costs: and the balance of price between poor and good coals will be destroyed.

2. The conservation of fuels will be defeated by the greater use of high-grade coal.

3. Natural variation in coal from the same seam or mine often makes it impossible for the mine operator to control or guarantee any fixed heating value.

4. It is impossible for the sampling to be always accurate.

5. By the old method of purchase coal can be sold and bought with less trouble and expense to both sides.

6. The poorer grade fuels will not be so much in demand, consequently, will remain unmined and sometimes will be lost entirely.

7. The consumer would effect greater savings in the use of coal if he would abolish wasteful methods of consumption instead of trying to save a few cents in cost of purchase.

8. Any saving in the delivered cost of coal would be more than counter-balanced by the expense required to take samples and have analyses made.

9. Competitive bidding between coals of different heating values would be restricted.

10. As sampling must be generally done by the buyer and it is not always possible for the seller to have a representative present when samples are taken, the latter is therefore entirely at the mercy of the purchaser as regards sampling methods.

General Consideration

The purchase of coal on specifications is a condition as well as a theory; a very practical condition, too, and one that demands careful consideration by both the buyer and seller. Efficiency is required in purchase as well as in use; it should apply equally to both.

Too many buyers have looked upon the purchase of coal by specifications as a remedy for their own inefficient methods in use, to be glossed over by using only high-grade fuel, which will give good results even with the most inadequate and wasteful equipment and ignorant cheap handlers. Many specifications are in use that were written from the point of view of the consumer only. They are often loosely drawn up, badly worded, unfair and apparently looking only to obtain the best article at the lowest possible price. In addition to this, they frequently leave out entirely, or dismiss in a few words, the most important item—the sampling of the coal.

Selection and Purchase

To buy coal intelligently on any basis, the buyer must first determine the kind and size most suitable for his particular plant. This can only be accomplished by actual working tests, and should be done before any contract, whether on a specification basis or not, is made.

The most efficient plant operation, at the lowest possible cost, is the basic consideration to the plant owner. As coal is a most important item, its purchase should be given the greatest care both by the one doing the actual buying and by the one responsible for its economical use, whatever may be his position.

No buyer should decide on specifications for coal to be used at his plant until he has considered carefully the following items and determined upon the kind of coal that will best suit his plant and conditions.

Boilers

1. Kind, capacity and arrangement.

Furnaces

1. Grates, surface and setting.
2. How operated, stokers or hand-fired.
3. If stokers, kind of coal they will handle best.
4. If hand-fired, kind of grates and kind of labor available.

Draft

1. Amount available and how controlled.
2. Kind: natural, forced or induced.

Load

1. Character; maximum, minimum and time.

Coal

1. Delivery at plant, method of handling, method of storage, how much.
2. Price at mines and freight rates.
3. Capacity of mines.
4. Conditions of delivery and movement from mines to plant.
5. Kind of cars to be used.
6. Moisture and its possible effect.
7. Volatile matter; its relation to furnace condition and smoke laws.
8. Ash, its amount.
9. Fusing temperature of ash.
10. Coking qualities.
11. Skill of firing.
12. Size.
13. Heating value.

RELIABLE METHODS WILL PRODUCE ADVANTAGEOUS RESULTS FOR BUYER AND SELLER

As to the attitude of mine operators and selling agencies, opinions today are somewhat divided. Many of the large producers are quite willing to sell on a specification basis, provided they may be assured of fair treatment. Others are against selling on any such basis and only do so when they cannot get certain large contracts in any other way. On the whole, a decided reaction has set in among coal sellers against the specification basis, and the same may be said about many large users and buyers.

As a general conclusion, it is believed by many chemists, engineers and others, that after the buyer of steam coal has decided on the description of coal he desires, and what is best adapted to his use, there are only two items to be considered, as regards analysis, in making up specifications; that is, the percentage of ash and the fusing temperature of the ash.

A standard percentage of ash of a given kind of coal (field or seam) insures a standard B.t.u. value; any change in ash percentage makes a corresponding change in B.t.u. value. The right ash-fusing temperature means no clinkers and good combustion results, if the coal is handled properly.

When smoke laws are to be observed, it may be necessary to specify also a maximum volatile content of the coal, although even here it would generally be advisable and more economical in the end to alter furnace and boiler conditions, so that higher volatile, cheaper (usually) coals could be used.

Simplicity, equity and practicability should be the characteristics of all contracts for the purchase of coal, whether on a specification basis or not.

Clean Coal

By Hon. J. J. Walsh
Secretary of Mines, Commonwealth of Pennsylvania

AMONG the causes for complaint in connection with the anthracite industry is the imposition upon the public of an inferior quality of coal. The other causes of complaint, high prices and difficulty of obtaining the desired supply, have received a great deal of notice and most severe criticism.

The complaint due to inferior coal has not been so greatly advertised, but it presents a very serious phase of the question. Most consumers of coal do not seem to consider that the quality has really a good deal to do with the cost of the fuel. Clean coal at $15 a ton may be deemed expensive, but if the quality is below a reasonable and honest standard the actual cost is proportionately greater. It is obvious that refuse or unburnable matter in coal to the extent of 10 or 15 per cent detracts from the heating value of the fuel and adds just that much more to the first cost.

To meet this condition Governor Pinchot conceived the idea of having the product inspected at the mines before shipment was made to market. To accomplish this purpose, he called upon the Secretary of Mines, who instructed the state mine inspectors in the anthracite region to inspect the coal loaded at the different collieries. The work is now under way.

The Federal Fuel Administration set a standard of quality for the different sizes of coal and, when the standard is adhered to by the operators, there can be no just complaint made regarding the quality of the coal.

The result of the inspection thus far made shows, however, that the percentages of foreign matter allowed by the standard have in many cases been exceeded. Of the 173 cars inspected to date, 28 were found to contain an unwarranted amount of refuse. This indicates that 16 per cent of the coal destined for market in the 173 cars was considerably below the standard and would have added materially to the cost to the consumer.

Standard Preparation of Anthracite

Size	Slate Per Cent	Bone Per Cent
Broken (or grate)	1	2
Egg	2	2
Stove	4	3
Chestnut*	5 to 7	5
Pea	8	10
Buckwheat	10	10

* An allowance is made on chestnut of from 12½ to 15 per cent of pea coal.

With regard to the sizing of anthracite, it is understood that the Fuel Administration set the following standard which operators are supposed to live up to:

Egg coal may contain not over 12 per cent of broken and 15 per cent of stove.
Stove, 12 per cent of egg and 15 per cent of chestnut.
Chestnut, 5 per cent of stove and 15 per cent of pea.
Pea, 5 per cent of chestnut and 30 per cent of smaller sizes, the latter not to include more than 3 per cent of No. 2 buckwheat.

The different sizes are used chiefly for the following purposes:

Broken—Gas-making, other manufactures, and steam-raising.
Egg—Domestic furnaces and open grates.
Stove—Kitchen ranges, base burners

(sometimes mixed with chestnut), small furnaces, open grates.

Chestnut—Kitchen ranges, small stoves, base burners (sometimes mixed with stove), and small, open grates.

Pea—Domestic furnaces with small openings in grate, kitchen ranges, and "banking" fires.

Buckwheat No. 1—Steam-making and self-feeding domestic furnaces.

Rice—Steam-making.

Barley—Steam-making.

Coal Price Regulation and the Constitution

By William Draper Lewis
Director of the American Law Institute

THE people believe they are paying too much for coal. There is, therefore, a growing demand for some relief, though I believe the overwhelming sentiment of the community is at present against public ownership of the mines. There is, however, an insistence that Government shall do more than investigate; that it shall act. The legal possibility and the economic desirability of price regulation have become matters for serious consideration.

If we pay too much for coal it is due either to inefficiency in production and distribution or to monopolistic conditions or to both. If exorbitant prices are due principally to the inefficiencies of the industry, Government price regulation by itself will not reduce prices. The mine owners, the labor unions, the transportation companies and the retailers may not be so black as they are sometimes painted, but they are not engaged in philanthropic activities. They intend their expenditure of money, brains and brawn to result in gain, not in loss. On the other hand, if exorbitant prices are due to monopolistic conditions, then greater efficiency in the conduct of the industry may not at all reduce prices. What all this amounts to is that if we now pay too much for coal, Government regulation of the price will result in significant price reduction only if the reason for exorbitant prices is the existence of essentially monopolistic conditions of coal production and distribution.

Would Government Regulation Be Constitutional?

Whether Government should regulate prices is an economic question, not a legal question. I leave its solution to those engaged in the industry, to the economist, and to all those wise persons whom we call statesmen if we admire them, politicians if we don't. Whether Government can regulate prices is a legal constitutional question of great and immediate practical importance. Under our American system of making law a statute embodying a new economic policy almost always will be challenged on the ground that it is unconstitutional. Putting aside, therefore, all question of desirability: Would Government regulation of the selling price of coal be constitutional?

Legislation by Congress or by the state legislatures must conform to the provisions of our Federal Constitution. The acts of state legislatures also must conform to the requirements of their respective state constitutions. Limitations of space confine the present discussion to the provisions of the Federal Constitution. I shall also be obliged to place myself under one more limitation. I shall not discuss the line which should be drawn between the powers of Federal and State Governments. A given sale of coal is either a transaction of interstate or of intra-state commerce. It may be asserted that a given act of Congress regulating the price of coal is a regulation of intra-state commerce, and that under the Constitution the power to regulate such commerce is reserved to the states. On the other hand, a state statute may be attacked, not on the ground that a state cannot regulate intra-state sales of coal, but on the ground that the particular statute in question regulates interstate sales and that in the absence of the consent of Congress such

regulation by the state trespasses on the power of Congress.

In discussing the constitutionality of regulating the price of coal the vital question is not as to the distribution of the power among the Federal and State Governments, but as to whether such power exists in either. The Fifth Amendment to the Constitution was adopted in 1791. It contains certain limitations on the methods by which the Federal Government may exercise its power. The Fourteenth Amendment was adopted after the Civil War in 1868. It imposes limitations of a similar character on the exercise by the states of their reserved powers. Both of these amendments declare that: "No person shall be . . . deprived of his life, liberty or property without due process of law."

The constitutionality of any law regulating coal prices will be attacked on the ground that it deprives the sellers of coal of their property without due process of law. Some states have already enacted statutes creating an agency for the regulation of the price of coal for short periods to meet what is declared in the statute to be an existing emergency or when the executive authority of the state declares an emergency to exist. One of these statutes was enacted by the legislature of Indiana (Chapter 44, Indiana Acts, 1920, page 43). The United States District Court in Indiana refused to grant a preliminary injunction against any order being issued by the state commission, basing their opinion on the ground that "the general power of the state to touch in some way the coal-mining industry exists" (*American Coal Mining Co.* v. *Special Coal and Food Commission*, 268 Fed. 563). The case, however, does not hold that the price of coal may always be regulated by law. Even if it did, until the question has been passed on by the Supreme Court of the United States, it will not be settled. If the Supreme Court decides that regulation of coal prices is forbidden by the due process clause, such regulation will be impossible unless a subsequent constitutional amendment authorizes it.

FUNCTIONS OF SUPREME COURT

To explain how the Supreme Court will deal with this question should it be presented to them for final decision, it is necessary to point out the functions exercised by the Supreme Court in our Constitutional System.

The Constitution, as adopted in 1789, created not merely a Federal Government but a Federal State. It vested certain powers in the Federal Government and also in effect reserved to the states all other powers. From time to time disputes arise as to the respective extent of these powers. The final determination of these disputes, if not left to negotiation and compromise, must be vested in some body. Under the leadership of Chief Justice Marshall the Supreme Court of the United States by disregarding an act of Congress or a state statute which they believed contrary to the Constitution became the final arbiter of all questions involving the respective powers under the Constitution of the State and Federal Governments. No other body has a prospect of functioning so well. To permit each state to determine the extent of its own powers would reduce the national government to impotency; to permit Congress to be the sole judge of its powers, as some suggest, would leave the constitutional rights of the states at the mercy of a temporary majority of a body moved by political motives. Let the man who wants to tinker with the Constitution by requiring less than a majority of the court to declare an Act of Congress unconstitutional, or by vesting in Congress

the power to determine the extent of its own powers, face the facts: What he advocates would virtually destroy our American system of national and state Governments, each supreme within its own sphere of action. For the preservation of our Federal State created by the Constitution the Supreme Court must be continued as the final arbiter of the limitations of Federal and state powers.

The Supreme Court not only decides finally questions concerning the respective powers of the Federal and State Governments but it determines also the relative spheres as defined in the Constitution of the three branches of the Federal Government, legislative, executive and judicial. Though the latter function is of far less importance, it prevents any fundamental alteration in the structure of the Federal Government not sanctioned by formal Constitutional Amendment.

In declaring a Federal or state statute unconstitutional because its provisions deprive the persons affected of their life, liberty or property without due process of law, the Supreme Court performs still another function,—the protection of individual constitutional rights. There are several clauses in the Constitution as originally drafted and many more clauses in the amendments since adopted which are designed to protect the individual. Examples are the clause in the 10th section of the first article prohibiting a state from impairing the obligation of contracts, and the clause in the Fourth Amendment declaring that the right of the people to be secure in their persons, houses, papers and effects against unreasonable searches and seizures shall not be violated. These and similar clauses, however, are much more definite than the due process clause in respect to the restrictions which they lay upon Government.

"WITHOUT DUE PROCESS OF LAW"

The provision that no person shall be deprived of life, liberty or property without due process of law is a technical legal expression to be construed in the light of its growth in Constitutional history. Even as thus construed it is perhaps capable of at least three widely different meanings. In the first place, it may mean that an official of the Government, to deprive a person of life, liberty or property, must show that he is acting in accordance with the customary rules of law or in accordance with the definite provisions of a statute. Under this interpretation, if the official shows that his conduct is justified by the terms of a statute, no matter how arbitrary those terms may be, he has shown that he is acting in accordance with due process of law.

The second possible meaning of the term is that in addition to the protection afforded under the interpretation just mentioned, it is designed to protect the individual from having his life, liberty or property taken from him by legal process (in the prosecution of criminal or civil cases against him) which is justified by the provisions of a statute, but is nevertheless arbitrary and not in accordance with the customs and usages which experience has shown are necessary to protect the individual from persecution under the forms of law.

The third possible meaning is that the provision is the announcement of a general principle, binding on the legislative as well as on the executive branches of Government, to the effect that the individual shall be free from being deprived of his life, liberty or property, not merely by unauthorized executive action or by statutes which establish arbitrary and unfair legal process in the prosecution of civil and criminal cases, but also by any statute,

the terms of which are arbitrary and unfair according to those ideas of individual liberty and personal rights which have been developed by the English-speaking peoples.

It will be seen that a statute regulating the price of coal or of any other commodity does not take from the owners their property without due process if the first or second meaning be taken. It is only when the third and far broader meaning is taken that the constitutionality of any price regulation by Government can be called in question.

It is probable that those who drafted the Fifth Amendment, in which the words are used as a limitation on the exercise of power by the Federal Government, used the expression "due process of law" in the second meaning just stated. The Supreme Court of the United States, in 1855, in the case of *Murray's Lessee* v. *Hoboken Land and Improvement Company* (59 U. S. 272) (the only case prior to the adoption of the Fourteenth Amendment in which the meaning of the words is carefully discussed), treats the clause as at least primarily a prohibition against arbitrary legal process, although there is nothing in the opinion of the Court to show conclusively that the Court at that time would not, if occasion had required, have given to the words the third and much broader meaning.

After the adoption of the Fourteenth Amendment, in 1868, the Court in the first cases arising under the Amendment construed the due process of law clause in that Amendment in the third and broadest sense. The consequence of this broad interpretation would be to give the Court a wide discretionary veto power over all Federal and State social and economic legislation were it not for a self-imposed limitation of great practical importance. Because the Supreme Court is a court and its members judges and not merely elder statesmen passing on the wisdom or folly of the representatives of the people, there is no capricious exercise of its power. The judges, being lawyers trained in our common law system of developing legal rules, feel themselves in deciding a particular case bound to a very high degree by the way in which the Court has decided previously other cases presenting analogous questions. Thus around the expression "due process of law" has grown a very considerable body of recorded decisions. From these decisions we may gain some idea of the rules of law which will be used by the Court as guides to determine the constitutionality of any statute questioned by a litigant before the Court on the ground that it deprives him of life, liberty or property without due process.

It is true that these case-made rules of law, like the case-made rules of the common law, are always subject to modification and change. A statute which may be held constitutional today may neither in fact nor in logic be distinguishable from the statute which the Court held unconstitutional some years ago. But it is as great a mistake to suppose that the judges use deliberately the due process of law clauses to invalidate laws which are opposed to their economic or social opinions, as it is not to perceive that by its broad interpretation of the meaning of the due process clause the Court has undertaken a function of supreme importance which profoundly affects our development as a nation. The Court, in view of the constantly growing desire for the increase of governmental regulation of industry, wields a power of which Marshall never dreamed. Though the due process clause has existed as a restraint on the Federal Government since 1791, only since the

adoption of the Fourteenth Amendment has it had practical importance.

Thus we speak correctly of the power exercised by the Court under the due process of law clauses when we say that it is not only a most important power, but a comparatively new feature of our constitutional system. It is no part of my present purpose to defend or criticize the existence of this power. But as my blunt statement of the matter may be taken by some as a criticism, it is perhaps right that I should point out that the Court has used its power, on the whole, in a manner satisfactory to the American people. Today, therefore, the burden is on him who would propose to strike the due process of law clauses from the Constitution or to narrow the broad meaning the Court has given to it.

This necessarily long explanation of the nature of the due process of law clauses is, I hope, sufficient to enable you to understand the few things that can be said in answer to the question: Is it constitutional for the national or state Governments to regulate the price of coal?

SUPREME COURT DECISIONS

I shall bring to your attention eight cases decided by the Supreme Court which throw more or less light on the facts which the Court would today take into consideration in passing on the constitutionality of any such legislation. The first of these cases, *Munn* v. *Illinois* (94 U. S. 113), was decided in 1876, the last so late as June 11 of the present year. Six of them involve statutes regulating the selling price of particular things; in two, the statutes in question regulated the price of labor in particular industries. In one case the Court dealt with an act of Congress; in the other cases, with state statutes.

There is one thing that can be said to be established by these cases, because it is the assumption which underlies in each of them the reasoning in the opinions of the Court. This assumption is that the due process of law clauses deprive Government of the power to regulate prices generally. If Government has the power to regulate the price at which an owner may part with certain property or give certain service, it is because of special circumstances connected with that property or service. There was a period after the adoption of the Fourteenth Amendment when the proposition just stated was open to argument before the Supreme Court, but that time has long since passed.

The Court in all six of the price regulation cases, nevertheless, in spite of this limitation on Government price regulation to which I have referred, has upheld the constitutionality of the statute. It becomes important, therefore, to ascertain what were the special circumstances which appealed to the judges in those cases as warranting an exception to the general rule that the price at which you or I may sell our products or give our services, or rent or sell our land, is our own affair—a right of property, which is taken away from us without due process by any statute which attempts to regulate the price.

In the first case, *Munn* v. *Illinois*, the Court held—two judges dissenting—that a state statute fixing maximum charges for the storage of grain in grain elevators was constitutional, because the owners of the elevators had a virtual monopoly and the business was "affected with a public interest." In *Spring Valley Water Works* v. *Schottler* (110 U. S. 347), a case decided in 1884 it was held—one judge dissenting—that Government can regulate the price charged for water by one having a virtual monoply. The Court held in the third case, *Georgia Railroad Com-*

pany v. *Smith* (128 U. S. 174), decided in 1888, that a state can regulate rates charged by a railroad company, because a railroad company has the privileges of a corporation and especially because it has the right to take private property for the construction of its road against the will of the owners by the exercise of what is known as "the power of eminent domain."

In the fourth case, *Cotting* v. *Kansas City* (183 U. S. 79), decided in 1901, the late Mr. Justice Brewer, delivering the opinion of the Court, expressed his own conviction that a state statute fixing the charges in stockyards would not violate the due process of law clause in the Fourteenth Amendment. The Court, however, held the particular act under consideration in that case unconstitutional, because its regulatory provisions were limited to the charges in stockyards of a specified size, and, therefore, the statute deprived the owners of these yards of the "equal protection of the laws" guaranteed by another provision of the Amendment. That the opinion of Judge Brewer would be followed today is indicated by the case of *Stafford* v. *Wallace* (258 U. S. 495) in which the Court refused to enjoin the Secretary of Agriculture from carrying out the provisions of the Federal Packers and Stockyards Act of 1921, although the Act gives to the Secretary the power to fix rates charged by stockyards. Chief Justice Taft says, "that it," the business of running a stockyard, "is a business within the power of regulation by legislative action needs no discussion."

In the fifth case, *German Alliance Insurance Company* v. *Lewis* (233 U. S. 389), decided in 1914, the Court held constitutional a state statute creating an insurance commissioner and vesting in him the power to fix fire insurance rates. One judge was absent and three dissented. The expressed ground of the decision was that the insurance business had been regulated in different ways for many years and the regulation of rates, as an extension of legislative power, was justified by the circumstances. The plaintiff argued that only such services can be regulated as can be demanded by the public. The Court refused to adopt this proposition.

The sixth and most recent case, or rather cases, involving price regulation are known as the rent cases. They are *Block* v. *Hirsh* (256 U. S. 134) and *Brown Holding Company* v. *Feldman* (256 U. S. 169), decided in 1921. The first of the two cases involved the constitutionality of an act of Congress creating a commission with power to fix the rent, services and other terms of use of property in the District of Columbia. It provided that the tenants' right of occupancy should continue on the rent and other terms fixed by the Commission irrespective of the expiration of any existing lease, unless the owner desired the premises for actual occupancy by himself, his wife, children, or dependents. The operation of the act was limited to two years. The act itself stated that its provisions were made necessary "by emergencies growing out of the war resulting in rental conditions in the District dangerous to the public health and burdensome to public officers . . . thereby embarrassing the Federal Government in the transaction of the public business."

The second case involved the constitutionality of a similar statute of the state of New York adopted on account of a most severe housing shortage in New York City. The Court upheld both statutes by a vote of five to four. Three of those voting with the majority, and one of those voting with the minority are no longer members of the Court. Mr. Justice Holmes, who delivered the opinions of the Court in

both cases, takes the position that the regulation is justified as a temporary measure, declaring "that a limit of time to tide over a passing trouble well may justify a law that could not be upheld as a permanent change." In the first case, he also points out that the emergency declared by Congress to exist is "a publicly notorious and almost world-wide fact."

VALIDITY OF CERTAIN BUSINESS AND GOVERNMENT LIMITATIONS

In attempting to judge the force of these two decisions as a precedent for or against the constitutionality of price regulation under other circumstances, two facts should be noted. First, in both cases the emergency alleged to justify the regulatory provisions of the statute arose out of a shortage of the supply of houses and apartments which created monopolistic conditions. Rent was not determined by the cost of building and by competition between those desiring to supply housing facilities, but by the dire necessity of those who contended with each other for a place in which to live. Second, the statutes went much further than regulating the rate at which an apartment or house should be rented. They gave to existing occupants the right to remain in possession although the leases under which they took occupancy had terminated and the owner might be desirous to rent to some one else. A statute which fixes selling or rental prices is one kind of Government regulation of business and property; a statute which requires the owner to sell or to rent is another and much more drastic kind of Government regulation.

In 1917 the Supreme Court in an opinion delivered by the late Chief Justice White, four of the nine judges dissenting, upheld the constitutionality of the statute of Congress known as the Adamson Act, which provided for an eight-hour day for all railroad employes to be paid at the rate previously paid for a ten-hour day. This wage rate was to continue for a few months pending an investigation by a commission. It is probable, though not quite certain, that the majority regarded the statute as being justified by the fact that it was adopted to avert a nation-wide strike of railroad employes (*Wilson* v. *New*, 243 U. S. 331).

On the 11th of last June, the Court announced its decision in the case involving the constitutionality of the Kansas Industrial Court Act: the case of *Wolff Packing Company* v. *Court of Industrial Relations*. In delivering the unanimous opinion of the Court, Chief Justice Taft reviewed the cases to which I have referred and other cases and threw much light on what the Court now regards as the limitations of the power of the Government to regulate business, especially prices and wages.

The statute in question declared that certain businesses were "affected with a public interest":

(1) Manufacture and preparation of food for human consumption.

(2) Manufacture of clothing for human wear.

(3) Production of any substance in common use for fuel.

(4) Transportation of the foregoing.

(5) Public utilities and common carriers.

It created an industrial court of three judges who were authorized to summon the parties to any industrial dispute in regard to wages or other terms of service, and were directed, if they found the peace and health of the community threatened by such controversy, to fix the wages and other terms of employment. The employer had to pay the wages ordered to be paid by the Court; the employe could terminate his employment as an indi-

vidual, but he could not combine with others to do so—strikes were prohibited. The Wolff Packing Company, an establishment employing about three hundred persons, refused to pay an increase in wages granted by the Court on the application of a union. A mandamus or order to compel them to do so was granted by the Supreme Court of Kansas at the request of the Industrial Court. The Company appealed to the Supreme Court of the United States, and the decision of the Supreme Court of Kansas was reversed on the ground that the Act in attempting to regulate the rate of wages deprived the Company and its laborers of their property without due process of law.

The opinion of the Chief Justice goes far to clarify the expression first used by the Court in *Munn* v. *Illinois* in describing a business as "affected with a public interest." He points out that businesses clothed with a public interest justifying some public regulation may be divided into three classes: (1) Those that are carried on pursuant to a public privilege, as railroad companies and many other public utilities which have the right to take private property in building their facilities; (2) certain occupations "regarded as exceptional, the public interest attaching to which, recognized from earliest times, has survived the period of arbitrary laws by Parliament or Colonial legislatures for the regulation of all trades and callings," as the business of conducting an inn or of operating a cab or grist mill; (3) businesses which "though not public at their inception may be fairly said to have risen to be such and to have become subject in consequence to some Government regulation."

Businesses Which Have Become Public

If the business of mining and selling coal can be regulated it is because it falls under the third class and it therefore becomes important to know the tests which the Court will apply in determining whether a business is or is not within this class. On this point the Chief Justice is clear. He says:

> It has never been supposed since the adoption of the Constitution that the business of the butcher or the baker, the tailor, the wood chopper, the mining operator, or the miner was clothed with such a public interest that the price of his product or his wages could be fixed by state regulation. . . . An ordinary producer, manufacturer, or shopkeeper may sell or not as he likes.

And then the Chief Justice adds this significant, and for our purposes, most important observation: In nearly all the businesses included within the third head above, that is businesses which have risen to be public,

> the thing which gave the public interest was the indispensable nature of the service and the exorbitant and arbitrary control to which the public may be subjected without regulation.

Here we have, so it seems to me, not only a substantially correct summary of the cases involving price and wage regulations in which the statutes have been upheld by the Court, but also in view of the present personnel of the Court a rule which will guide its determination of similar questions in the immediate future. In effect, the rule given by the Chief Justice amounts to this: The price of a commodity or service can be regulated by law provided; (a) the use which it serves bears a sufficiently close relation to the welfare of the community, and (b) monopolistic rather than competitive conditions would, without such regulation, control the price.

The requisite importance of the use of a commodity or service is a matter of degree. The Court will not and should not attempt to draw an exact

line. So far as the regulation of the price of coal is concerned, this factor of constitutionality needs no special investigation. Coal is a necessity to modern industry and to the health of the community.

GOVERNMENT CONTROL NOT ALWAYS POSSIBLE

If there is doubt as to the constitutionality of the regulation of the price of coal it arises with respect to the second factor. Whether the conditions which regulate the price of a commodity are monopolistic or competitive in character is often a most complicated question. In modern industry the selling price of most articles is the resultant of many factors into which both competitive and monopolistic conditions enter. Thus even where the article is patented and the producer holds a legal monopoly, the article itself may and indeed often does enter into competition with unpatented substitutes. Whether such monopolistic conditions exist as to make lawful Government regulation of price is a question of degree, just as the requisite importance of the commodity or service is a matter of degree. Because coal exists in limited quantities which cannot be increased and in that sense is a natural monopoly, it does not follow that its selling price is subject to monopolistic conditions. Land is limited in quantity, but the Supreme Court would not for a moment on that count alone uphold a statute regulating the price of land or of agricultural products, because as a matter of fact the rent or selling price of land is often the resultant of competition among owners to rent or sell. The fact that coal is limited in quantity, coupled with its importance to our prosperity as a nation would today probably justify before the Supreme Court a statute regulating the quantity mined in any one year or its export to foreign countries; but we cannot, therefore, conclude that the price can be regulated.

Since the opinion in the Kansas Industrial Court case it can be asserted with confidence that because a business can be regulated in one particular, it does not follow necessarily that it can be regulated in every other particular. The opinion apparently puts an end to the idea once prevalent that there is a class of businesses not affected by a public interest to which no regulation will apply and a class of businesses affected by a public interest which can be subjected in all things to Government regulation. No business can be regarded as exempt from any public regulation. Few if any businesses can be subjected to every conceivable kind of governmental control. Each regulation to be constitutional must stand, so to speak, on its own feet.

COURT DECISION A MATTER OF FACT

To justify before the Supreme Court the regulation of the price of coal generally, or the price of anthracite coal, it must be shown that at present the price is to a very considerable degree governed by monopolistic conditions. The answer to the question: "Can the price of coal be regulated by Government in view of the due process of law clauses in the Constitution?" is, therefore, if I have correctly stated the rules of law which will govern the opinion of the Supreme Court, primarily a matter of fact.

Although many of the conditions which throw light on the answer to this question of fact are known and, although anyone from the President or Governor to the humblest citizen is entitled to his opinion, it would be both a reckless and a foolish lawyer who would positively advise the Government authorities or private clients that

a state statute or a Federal Act regulating the price of coal would be declared by the Supreme Court constitutional or unconstitutional. It is the kind of question to which no certain answer can be given before the Court speaks. The Supreme Court cannot express its opinion until a Government price regulation is made and someone affected disputes the constitutionality of of the regulation.

THE WAY OUT

What, then, to use the name by which this section of the volume is headed, is "The Way Out" of present coal and especially anthracite coal conditions—conditions which are admittedly unsatisfactory to the public and not wholly satisfactory to those engaged in the industry whether as operators or miners?

In the first place I admit, though reluctantly, that experience now covering many years gives us little right to hope that voluntary action on the part of the operators and miners can be trusted to result in giving the public reasonable service at reasonable prices. I say reluctantly because I am enough of an individualist to believe that the development of a sense of obligation of public service in those working in the industry is likely to be more fruitful in good results than Government regulations however wisely conceived or well executed.

In the second place, admitting that some Government action is necessary, in view of the fact that the constitutionality of Government regulation of the price of coal, even of anthracite coal, is at present doubtful, the first thing that is clear about any program of action by the national Government or by any state government is that it should not be so bound up with price regulation that the entire success of the program would depend on the Supreme Court supporting the right of the Government to fix the price of coal.

That the program of Government action should not entirely center on price regulation is not only legal but economic common sense. If Government attempts to regulate the price of coal and the Supreme Court holds that the regulation deprives the owners of coal of their property without due process of law, it would be because the majority of the Court were convinced that monopolistic conditions do not at present control the price of coal. If the Supreme Court made such a decision and was right as to its facts, the decision would not deprive the people of any control over the coal industry which they could use with advantage. I have already pointed out that Government regulation of price will have no significant effect on prices unless the reason we pay too much for coal is that the present selling price is controlled by essentially monopolistic and not competitive conditions. What I wish to bring home to you is this: That the constitutionality of price regulation and the practical usefulness of price regulation to the public depend on the same thing—the extent to which the price of coal to the consumer is controlled by essentially monopolistic conditions.

SUGGESTED PROGRAM FOR GOVERNMENT ACTION

The Government action to which I suggest that consideration be given is:

First: The creation of a Government commission to which will be given:

1. Power to investigate effectually all things pertaining to the industry.
2. Power to make public any fact ascertained.
3. Power to make recommendations in respect to anything connected

with the industry, including prices, wages, methods of production and distribution, and also to recommend legislation.

4. Power, should a recommendation be disregarded, to issue at its discretion an order directing compliance with the recommendation, the order to be binding, but subject to review by a specified court.

Second: The statute should make it clear that, while it is the duty of the commission to exercise its power of investigation and also to make recommendations as to wages, prices and other things connected with the industry, the power to make an order that a specific recommendation be followed shall be exercised not as a matter of course on the disregard of a recommendation, but only in those cases where in the opinion of the commission the facts warrant not merely Government investigation and recommendation, but Government regulation.

This bare outline of a possible program for Government action will, I hope, be sufficient to enable me to make clear to you the fundamental differences between the Government agency which I suggest for consideration and the Interstate Commerce Commission and other public service commissions.

JUST WHAT THE COMMISSION WOULD DO

The statutes creating public service commissions are drawn upon the supposition of the existence of definite controversies as to rates and other terms of service. A principal function of such commissions, therefore, is to hear and settle these controversies as a court hears and decides legal questions. The statute proposed would, if I may be allowed the expression, breathe an entirely different atmosphere. Its primary object would be not to settle disputes whether of wages or prices, but to create conditions which would largely prevent such disputes arising. While, therefore, any citizen or group of citizens could, of course, call the attention of the Government agency to any matter which they believed needed investigation, it would be the duty of the Government agency to make its own investigation in its own way. In so doing it would not model its proceedings on Court proceedings as the public service commissions have done. It would seek the facts with the help of the coöperation of the individuals and associations engaged in the industry whether as owners or employes, though, of course, full opportunity for a hearing would be afforded to those affected by an order before the order was issued.

Again, the public service commissions are almost entirely confined to the consideration of rates and services. It is known that there are in the coal industry serious deficiencies in what may be termed its organization, as in the methods of distribution and in the relation borne by the number of mines and miners to our need for coal. So far as can now be seen, a commission which could not investigate, recommend and if necessary regulate the organization of the industry might prove almost entirely useless. The investigations of such an agency might show conditions justifying many Government regulations, but not price regulations.

The most important difference, however, between the commission suggested and the present public service commissions would be that publicity and recommendation would precede mandatory regulation. Coal is essential. If the public cannot get gross abuses corrected without the club of a Government order, then the club

should be used. To create a commission with investigatory and recommendatory powers only would be childish. But this should not blind us to the fact that we are never going to get satisfactory conditions until there is developed among owners, miners and Government commissioners a common will to give good service to the public.

Finally, and as bearing directly on the specific subject of this paper, which is the constitutionality of Government regulation of the price of coal, we must in any program for Government action keep before us the fact that the power of Government under the Constitution to regulate the price of coal depends on a fact—the existence of essentially monopolistic conditions which will control prices in the absence of such regulation. Under our system of hearing and deciding cases this fact must ultimately be determined by a group of learned lawyers, members of the Supreme Court, not by a jury of persons familiar with business or trained to the scientific investigation of business conditions. There is no reason, however, why the Court should not pay great respect to the conclusions of fact arrived at by a properly constituted Government fact finding commission.

The suggested commission would not issue an order unless they had themselves found facts which convinced them that such order was warranted. The facts which they believed to justify them in making the order would be just those facts which would tend to convince the Supreme Court, should the power to issue the order be questioned, that the order did not deprive those affected of their property without due process of law.

You will note that I have not suggested whether the commission proposed shall be state or national. There is no reason why every state should have such an agency. On the other hand, it is clear that at least two governments should now act in regard to the present coal situation—the Federal Government and the Government of Pennsylvania. If these two governments can act effectively, each in its own sphere, the "way out" of existing conditions would be found, because the other coal-producing states would follow Pennsylvania's lead. Pennsylvania is more interested in finding a "way out" in the coal industry than any other state. Fortunately, she has now in her two representatives in the Senate and in her Governor men from whom she has a right to expect suggestions for constructive action. Congress can and should act this winter. Unfortunately, the Pennsylvania General Assembly does not meet until 1925. This, however, has one advantage in that it gives ample time, if the subject is taken up at once, to develop a plan that can be thoroughly discussed before the election next fall. The one thing that the people should not, and let us hope will not, excuse is a policy of drift and inaction by Congress or by the government of the great state whose welfare is so intimately connected with a satisfactory solution of the coal problem.

(NOTE ON STATE STATUTES REGULATING THE PRICE OF COAL)

In Indiana an act was passed in 1920 creating a Coal and Food Commission [c. 44 of Indiana Acts, 1920, page 143]. The Commission was to exist until March 31, 1921, unless continued by subsequent legislation. (Apparently this act was not continued by subsequent legislation.) The Commission was given power to

(1) Fix the price to jobbers, wholesale or retail dealers or to the public of all coal moving in intra-state com-

merce; it was not to be confiscatory, nor less than the actual cost of the coal plus a fair and reasonable return on the property used in the production and sale thereof, nor in excess of any price which might be fixed by the Federal Government.

(2) To require production and sale of enough coal for domestic purposes.

(3) To license persons, firms and corporations, and to revoke its licenses.

(4) To advise priority of different coal users.

Appeals to the courts are allowed from the Commission's orders and rulings. Coal moving in the interstate commerce is specifically exempt from the provisions of the statute. As to food, the Commission was only to find facts and to make reports.

A New York statute of 1922 [special session, 1922, ch. 673, page 1743—Cahill's Consolidated Laws, 1923, page 2464] declared that an emergency existed and should be regarded as continuing to exist until the Governor issued a proclamation to the contrary. It gave the Fuel Administrator the following powers:

(1) To regulate the receipt, storage, purchase, sale, use, distribution or delivery of fuel within the state and of production within the state.

(2) To fix prices or reasonable profits.

(3) To forfeit unnecessary intermediate sales.

(4) To compel sale and distribution of fuel.

(5) To compel allotment and apportioning.

(6) To buy and sell fuel for public or private consumption, if the Governor should declare the emergency to be acute.

(7) To prevent waste of fuel, and to limit or regulate the production and distribution and use of light, heat and power.

(8) To issue licenses to sell fuel and to revoke them.

"Fuel" includes coal, coke, charcoal, firewood, fuel oil and manufactured fuel products, but not gas or electricity. The office of fuel administrator was abolished by proclamation of the Governor, March 27, 1923.

A similar law is a recent enactment by the Rhode Island Legislature, 1923 laws, ch. 2306 (Jan. 12, 1923). It declared an emergency and created the office of State Fuel Administrator to continue until January 31, 1924.

In New Hampshire a statute [laws 1923, ch. 111, page 130] authorizes the Governor to appoint a fuel administrator during the emergency, providing that the Governor and Council shall have decided that the emergency exists. The Administrator may make rules "with respect to the sale and distribution of fuel," including price and standard fixing.

A Connecticut statute [laws 1923, ch. 5, page 3477] authorizes the Governor to declare that an emergency exists. In such case it is made a crime (punishable by fine and imprisonment) to refuse to sell fuel at a reasonable price or to sell at an unreasonable profit or upon unreasonable conditions.

A Code of Industrial Law

By Hon. William S. Kenyon
Iowa

THIS is an age of vexatious problems. Across the sea we behold a chaos of hatred and desperation—a situation calling loudly for solution, but apparently calling in vain. In our own country there is a spirit of unrest, a suspicion of one another, an unfortunate greed, all coupled with hate and a general "headhitting" feeling throughout the land.

In the West we have a pretty well defined sentiment that agriculture has not had a square deal. Present and prospective prices for agricultural products are, however, easing that situation. The people of the cities have come to a realization in the last two years that there can be no enduring prosperity for the nation if agriculture is paralyzed. While the question of raising foodstuffs for our people is the most practical question with which the nation is concerned, yet the question with which you are dealing here is nearly as important. Outside of truck or oil transportation, foodstuffs and the instrumentalities to produce them cannot be transported save by the use of coal. In our northern climates where there is a scarcity of wood people cannot exist without coal. Business cannot carry on its activities without it, and there is probably no question today that is more immediately vital than that of supply and cost of coal.

The continual rise of prices, the constant recurrence of strikes, is a tax on all industry, and a very severe tax on the people's patience. The almost annual strikes and long discussions incident thereto, with a mere temporary adjustment at the end, have not tended to produce a feeling of stability among the people, or confidence in their ability to secure an adequate supply of coal at reasonable prices. Anthracite coal has become a luxury.

Government Control of Coal a Possibility

Thinking people who are willing to recognize a situation when confronted with it, understand one thing, and that is that the people of the United States are going to have coal. They have a feeling that the coal has been put into the ground by the Almighty for the benefit of all the people and not for the few; that it was not put there to promote profiteering or unconscionable dividends. If the people of the United States cannot secure their coal at a fair price representing a reasonable return upon the investment, a just living wage to those who produce it, and further a supply upon which they can rely, a way will be devised, of course within the law and constitutional limitations, for the Government to acquire the coal mines of the country and to operate them for the benefit of all the people. That would be a last resort, but a resort that is within the probabilities if present conditions are to continue, and if the people are to be harassed every year by the fear of not being able to get their coal. No denunciation of any such condition as socialistic will halt the onward sweep of that movement if the conditions of the last few years are to continue.

One may argue that it would be undesirable for the Government to acquire the mines and impossible for it to operate them, but it is an indictment of government to say that it could not be

done. I am not arguing for the proposition, but merely suggesting that it may come. And there are strong arguments in its favor, for if the burden of unconscionable profit were taken off of the supply of coal it would take from the business of the country an enormous tax and tend to advance prosperity, while further, under Government operation, there would be no strikes.

PAST STUDIES OF CONGRESS ON COAL SITUATION

Congress has frequently taken note of the situation; and the so-called "Calder Committee" a few years ago made an exhaustive examination of the subject. Its report is intensely interesting and instructive. One coal operator before that Committee admitted that the extortionate prices charged the American people for coal in the year 1920 would reach an enormous sum of excessive profits. I should hesitate to name the figure which Senator Calder stated in a speech on the floor, or in an interview, the American people had been robbed of, but it ran into appalling figures. Of course, had the statement been made by a progressive western Senator it would have been considered very wild and bolshevistic in its tendency, but coming from a New York stand-pat Senator it is entitled to credence even among the most incredulous.

There is no particular satisfaction that the people can gather from the experiences of the past on this coal question. As far back as 1902, President Roosevelt, through his "Anthracite Coal Commission," was struggling to settle the proposition in the anthracite field. It was merely a temporary adjustment.

When I became a member of the Senate in 1911 the question of the coal field troubles of West Virginia was before Congress. A Committee was appointed, of which I was a member, which investigated thoroughly the situation. Two of the members of that Committee reported in favor of governmental ownership of the coal properties, or at least the Government taking them over, as the only remedy for conditions then existing. The situation as disclosed at that time in the Paint and Cabin Creek Coal Fields was one difficult for reasonable people to believe.

Again, in 1920, in the West Virginia Coal Fields trouble arose which almost reached the dignity of civil war. Armies were marched across the mountains and bloody encounters ensued. Again Congress acted, and in June 1920, the Senate passed a resolution for an investigation by its Committee on Education and Labor of the situation in the coal fields of West Virginia in the territory adjacent to the borders of West Virginia and Kentucky. The Committee made a thorough investigation, but its members were unable to agree.

THE ADVISABILITY OF AN INDUSTRIAL CODE

As Chairman of that Committee I filed a report which, while not criticised by the other members of the Committee, was not concurred in, and they filed a short report advocating the incorporation of labor unions. In my report I recommended the adoption of an industrial code, and the building upon that as a foundation of industrial courts. That is the subject I am pleased to have the opportunity to present briefly to this thoughtful assemblage.

We have in practically all of our State Constitutions and in the Federal Constitution what is known as a Bill of Rights. These rights have evolved through the strain, usages and processes of the ages. They represent the out-

come of strife with tyrannical rulers, and they are valued above everything else by the citizens as a Code of Individual Rights—not merely directory, but mandatory upon our courts as to all questions of civil rights.

The idea of the industrial code is based on the same underlying conception as these ideals of civil rights. Industrial life as we know it is not of ancient origin. The change from home to factory methods and the use of powerful machinery has brought about modern industrial life. Out of the many situations, customs and practices which of necessity have arisen in such industrial life, there are certain fundamentals which the public has come to understand as essential to any fair arrangement between Labor and Capital. So an industrial code is a fundamental bill of industrial rights for both Capital and Labor. The main requisite for industrial peace is the removal of misunderstanding. How can it be removed unless fundamental rights of employers and employes are clearly defined?

The public is entitled to know what the rights of Capital and the rights of Labor are; and to know that these rights are to be protected by some instrumentalities for their enforcement. The industrial code which was suggested in the Report of the Senate Committee in the last investigation of the West Virginia coal fields represents, I think, the best thought and experience of those who had much to do with this question during the war. It would have been impossible to have carried on the war with continual strikes, misunderstandings, and turmoil between employers and employes in the great basic industries.

The War Labor Policies Board

It was evident to the President that there must be some uniform policy on the part of all branches of the Government in dealing with industrial conditions and relations, and to bring this about the War Labor Policies Board was created. Further, in order to put into effect a uniform series of principles for industrial conditions, a Labor Conference Board was convened in the year 1918 composed of representatives of organized labor and organized employers. This Conference agreed upon a series of principles, or in fact upon an Industrial Code, and recommended that the President proclaim the Code and also establish a National War Labor Board for the purpose of interpreting it. President Wilson took this action, and a Code was proclaimed by Executive Order in April, 1918. The National War Labor Board was instituted, consisting of representatives selected by the American Federation of Labor and the National Industrial Conference Board, with two joint chairmen; one, former President William H. Taft; the other, the Hon. Frank P. Walsh. Both of these distinguished gentlemen performed the most patriotic service, and the findings of this Board received the approval of both Capital and Labor. Its work extended until August, 1919, and it handled over twelve hundred cases. I think never before had such a Board been set up under a Code of fundamental principles in any country in the world.

I have not the time to set out this entire Code of the National War Labor Board, but it recognized:

1. The right of workers to organize in trade unions and to bargain collectively through chosen representatives.

2. The right of employers to organize in associations or groups and to bargain collectively through chosen representatives.

3. It prohibited employers from discharging workers for membership in trade unions or for legitimate trade union activities.

4. It prohibited the workers from using coercive measures to induce persons to join their organizations.

5. It provided where the union shop existed, union standards as to wages, hours of labor and other conditions that should be maintained.

6. Certain provisions as to women in industry.

7. A recognition of the eight-hour day.

8. A provision as to maximum production being maintained.

9. And further provided for a living wage.

General Activity Towards Formation of Industrial Codes

After the war it was the hope of many that this Code of the National War Labor Board could be enlarged and the same kind of work carried on in peace as in war, and the movement for an Industrial Code was given great impetus by the success of the National War Labor Board. Impartial students realized that it had within it hope for the wage-earners themselves; that it would bring about a fairer measure of economic and social welfare. Churches, both Protestant and Catholic, in promulgating reconstruction programs, have laid stress upon the necessity of the adoption of well-defined principles for the determination of industrial relations.

In 1919 the British Government convened a National Industrial Conference of employers and employes. More than eight hundred delegates assembled in London under the auspices of the Government, and this Conference submitted to the Government a constructive policy. The Dominion of Canada shortly thereafter formed a Canadian Industrial Conference. Representatives of the public were invited to this Conference and took part, but could not vote.

It should be noted also that the Inter-Church World Movement which had been launched in this country in 1918 had a Department of Industrial Relations, and a Conference was called of this movement in New York on October 3, 1919, but, as the President had called a Conference in Washington for the same month, very little was done by that Church Conference, although some two hundred delegates met in New York to consider the function of the Church in relation to industrial matters. The findings of this Conference were most significant.

Washington Industrial Conference

The first Industrial Conference in this country met at Washington under a call of President Wilson October 6, 1919. The President in his call stated its purpose to be that of consulting together on the great and vital questions affecting our industrial life and their consequent effect upon our people. Further, that it should be the duty of the Conference to discuss such methods as have already been tried out, of bringing Capital and Labor into close coöperation.

There were three groups in this Conference: employers, labor and the public. The public group was given the right to vote in contradistinction to the procedure of the Canadian Conference. Each group submitted a program. The public group program was submitted by Hon. B. M. Baruch, Chairman of the former War Industries Board, who brings to every question a breadth of knowledge and a clear conception of its relationship to other public questions. The labor group set forth the principles and standards for which they had striven for years. The employers' program was a statement of more or less general principles applicable to the management of industry.

Many plans were submitted for adjustment of disputes, but the Conference split on the question of collective bargaining and trade unionism, and this arose over a resolution recommending arbitration of the steel strike then in progress. The President attempted to save the Conference, but it was impossible. The failure of this Conference was an industrial tragedy, not only in that it accomplished nothing, but it created a general feeling that the questions were impossible of solution, and that there could be no enduring, industrial peace.

SECOND CONFERENCE CALLED

President Wilson convened thereafter a smaller conference which met December 1, 1919. Secretary of Labor Wilson, was Chairman, and the Hon. Herbert Hoover, Vice Chairman. Final report of this Conference was transmitted to the President March 6, 1920, and in this report recommendations were made for the establishment of elaborate machinery for the mediation and arbitration of industrial disputes, including national and regional boards of adjustment. No principles, however, were suggested for the guidance of the agencies to be created. If the system proposed by this Conference should be adopted, its operation would be similar to courts in civil life were there no special or general statutory law or fundamental, political Constitutions. Matters would be determined by local customs and practices, and appeals to the higher court made only on questions of concrete fact and not upon the basis of pure law or practices and safeguards of general application.

I think the mistake in this Conference was that they did not set forth a code of principles for the determination of industrial disputes. The machinery without the foundation to place it upon is of little benefit.

BILL PASSED TO LOOK INTO COAL SITUATION

At the last session of the Congress a bill introduced by Senator Borah for a Fact Finding Commission as to the Coal Mining Industry was passed. The Commission has made a number of reports. The last one has just recently been released. I have had the pleasure of examining it and it is a document evidencing great study and meditation upon the part of the Commission.

They emphasize the fact that coal is charged with a public use; that it is one of the essentials of life, nearly as important as food products. This Commission urges full publicity of all facts and statistics as to the coal business on the theory that it is not a private business, and recommends the creation of a special division in the Interstate Commerce Commission to deal with the coal mining industry.

The final report of this Commission proposes no Bill of Rights in the industrial world, or code, such as I have suggested. Believing as I do that there can be no permanent solution of these questions without it, the report is in that respect, from my viewpoint, not complete, but as a whole it is a great contribution to the literature upon the subject. If the matter is committed to the Interstate Commerce Commission the same need exists for an Industrial Bill of Rights as a foundation for the actions of such Commission.

Other efforts were made, such as the Kansas Court of Industrial Relations, and legislation similar to this has been pending in various states. I have never believed the Kansas Court of Industrial Relations could endure. It is not in harmony with previous experience here or abroad as to strike legislation. It aims to solve a problem in human adjustment with an arbitrary, rigid and unrestricted judicial

fiat. It does not function upon the basis of any series of principles or industrial rights which may be appealed to by any person or corporation coming under the Board's jurisdiction. If an industrial code were substituted for the anti-strike prohibitions and penalties such courts could perform a useful public service.

WHY A CODE WAS NEEDED AND THE STEPS TOWARDS ITS FORMATION

It must always be borne in mind that the principles, not the machinery, are of prime importance. Machinery is necessary for the purpose of getting the facts and judicially applying principles, but the machinery is not so difficult of establishment as is the formation of an industrial code. The entire purpose, of course, fundamentally, is to bring about a spirit of understanding and cooperation. There is a spirit of unrest today in labor circles. Labor feels it has not had a fair share of the wealth which it has created. Capital looks with distrust upon certain leadership by labor because it fears an arbitrary use of power or some restriction upon output or cost of production.

During the war we did not seem to have these suspicions. It is unfortunate that they have returned to plague us. The interest of the public is in bringing back an era of confidence and coöperation. It seems to me the only way this can be done is by legislative action establishing a code of principles regulatory of industrial relations and conditions. Capital and Labor seem unable to reach an agreement by themselves. There is a great third party, the public, in every strike. This code would protect the public interest and at the same time safeguard the rights of both Labor and Capital. It need not be rigid and could be changed by legislative enactment.

The Chairman of the Senate Committee on Education and Labor on January 22, 1920, introduced in the Senate Concurrent Resolution No. 24. It proposed that by the action of Congress a National Labor Board should be created composed of representatives of Capital, Labor and the public, with power to establish smaller boards in all the basic industries. This Board would constitute a supreme court of industry. It would not have original jurisdiction, but would hear appeals on questions of principle or law. The subordinate boards in the various basic industries would have original jurisdiction as to questions of fact; that pending the adoption of a code the principles of the National War Labor Board should be mandatory upon the deliberations or decisions of the National Board and the subordinate Industrial Labor Boards. This was the machinery provided. Other legislative matters crowded the hearing of this Resolution off the Boards and it really never received consideration.

In the Transportation Act of 1920 there was the beginning of an industrial code. Seven principles are enumerated which should be mandatory upon the Labor Board created by the act in its determination of wages. Later, the Board itself in a decision enunciated sixteen additional principles which were made mandatory upon industrial relations and conditions throughout the transportation industry. So by action of Congress, supplemented by the decision of the Labor Board, a code of twenty-three fundamental principles was established in the transportation industry for the determination of wages, working conditions and industrial relations. This is a direct parallel for the action which some of us insisted should be taken by Congress for the coal industry.

The Code which I proposed, as Chairman of the Committee investigat-

ing the West Virginia situation, is as follows:

The Proposed Industrial Code

1. Coal is a public utility, and in its production and distribution the public interest is predominant.

2. Human standards should be the constraining influence in fixing the wages and working conditions of mine workers.

3. Capital prudently and honestly invested in the coal industry should have an adequate return sufficient to stimulate and accelerate the production of this essential commodity.

4. The right of operators and miners to organize is recognized and affirmed. This right shall not be denied, abridged, or interfered with in any manner whatsoever, nor shall coercive measures of any kind be used by employers or employes, or by their agents or representatives, to compel or to induce employers or employes to exercise or to refrain from exercising this right.

5. The right of operators and of miners to bargain collectively through representatives of their own choosing is recognized and affirmed.

6. The miners who are not members of a union have the right to work without being harassed by fellow workmen who may belong to unions. The men who belong to a union have the right to work without being harassed by operators who do not believe in unionism. The organizations have a right to go into non-union fields and by peaceable methods try to persuade men to join the unions, but they have no right to try and induce employes to violate contracts which they have entered into with their employers, and the operators on the other hand have the right by peaceable means to try and persuade men to refrain from joining the unions.

7. The right of all unskilled or common laborers to earn an adequate living wage sufficient to maintain the worker and his family in health and reasonable comfort, and to afford an opportunity for savings against unemployment, old age, and other contingencies is hereby declared and affirmed. Above this basic wage for unskilled workers, differentials in rates of pay for other mine workers shall be established for skill, experience, hazards of employment, and productive efficiency.

8. The right of women to engage in industrial occupations is recognized and affirmed; their rates of pay shall be the same as those of male workers for the same or equivalent service performed; they shall be accorded all the rights and guarantees granted to male workers and the conditions of their employment shall surround them with every safeguard of their health and strength and guarantee them the full measure of protection which is the debt of society to mothers and to potential mothers. Few women are engaged in any way in mining, but it may be as well to announce this proposition as to pass it by.

9. Children under the age of 16 years shall not be employed in the industry unless permits have been issued under state authority.

10. Six days shall be the standard work week in the industry with one day's rest in seven. The standard work day shall not exceed 8 hours a day.

11. Punitive overtime shall be paid for hours worked each day in excess of the standard workday.

12. When a dispute or controversy arises between operators and mine workers, there should be no strike or lockout, pending a conference or a hearing and determination of the facts and principles involved.

Where the Code Would Be Valuable

Suppose such Code had been adopted by Congress and the necessary ma-

chinery had been established to carry it into effect. Suppose then a strike had been threatened or inaugurated over the wage question. The board or court has power to determine it. The fundamental to a just determination is that men have the right to a living wage, but the query at once arises what is a living wage. Is it merely enough to exist, with no thought of any of the real comforts of life or any saving for old age? Is it merely a hand-to-mouth existence? We turn to the Code and there find a living wage defined as

> sufficient to maintain the worker and his family in health and reasonable comfort, and to afford an opportunity for savings against unemployment, old age, and other contingencies.

And this definition is a guide to the board or court. So, with other questions provocative of misunderstanding and strife. Possibly the most difficult would be that of collective bargaining. The Code declares for the right of operators and miners to bargain collectively through representatives of their own choice. The right of collective bargaining means the right of employes, when they so desire, to deal collectively with their employers. To some extent it implies a limitation upon the freedom of employers to discharge employes for membership in unions. Here undoubtedly arises a bone of contention. The very familiar Hitchman case, 245 U. S. 250, supports the doctrine that the employer has the right to discharge an employe for any particular reason that he may see fit. In that case the Court says:

> This Court repeatedly has held that the employer is as free to make non-membership in a union a condition of employment as the workingman is free to join the union, and that this is a part of the constitutional rights of personal liberty and private property, not to be taken away even by legislation, unless through some proper exercise of the paramount police power. In the present case, needless to say, there is no act of legislation, to which defendants may resort for justification. (*Hitchman Coal & Coke Company v. John Mitchell*, 245 U. S.)

The holding of that case is apparently that the employer has the constitutional right not to employ men who belong to a union, but at the time of the decision in the Hitchman case there had been no legislation by Congress on this subject. And the decision especially refers to the fact that there is no act of legislation to which defendants may resort for justification. To sustain an action by Congress establishing this right to collective bargaining as part of an industrial code, there enters the question of public welfare, and if the public welfare requires the principle of collective bargaining to be conceded to workers as a legal right a different question would be presented than in the Hitchman case. The question is, of course, not without difficulty, especially in view of a recent decision of the Supreme Court of the United States on the relationship of coal mining to interstate commerce.

President Harding in one of his last messages to Congress said:

> The right of Labor to organize is just as fundamental and necessary as is the right of Capital to organize. The right of Labor to negotiate, to deal with, and solve its particular problems in an organized way, through its chosen agents, is just as essential as is the right of Capital to organize, to maintain corporations, to limit the liabilities of stockholders.

He evidently was of the opinion that collective bargaining through chosen agents was a right of Labor. I talked this matter over twice with the late President, and in one of his Messages to Congress he spoke of the probable necessity of the adoption of an Industrial Code.

The Power of Public Opinion

There is no question in this country of greater importance than that of bringing about industrial peace. Why not try some such plan as this? If it does not work it can be abrogated. Some men in whom I have great confidence have suggested that as we do not propose any penalties there is no way to enforce the orders of the court or board. I do not believe in compulsory arbitration, or that it can ever be brought about. The experience of Australia and other countries which have tried it carries with it a condemnation. You cannot compel men to work except possibly as a punishment for crime, and you cannot prevent men from leaving their positions if they desire to do so. But the orders of this board or court (call it what you may) would be enforced by public opinion. There is no greater power than public opinion. Many of the mandates of the Supreme Court cannot be enforced by United States Marshals, but they are enforced by public opinion. In controversies between states where the Supreme Court may find that one state is indebted to another, or that one state grafted out of another shall assume a certain part of the incurred public debt of the state, there is no way of enforcing it. Neither corporation, individual, nor body of men, can stand against an enlightened and aroused public sentiment. This has been shown in the action of the steel companies with relation to the 12-hour day. It will also be shown before a great while in the effect upon the commonly known "Pittsburgh-plus" method of steel sales in the West. Publicity of the actions of either the National Court or the subordinate one would bring about a public sentiment that would enforce the decrees.

I am anxious to see the proposition of an industrial code tried out. If there is anything better let us have it. The cry of the times is, "Let us have industrial peace." The limited code worked well during the war. It has been recognized in the Transportation Act, but not to the full extent necessary. This country can never reach its full measure of prosperity, it can never go forward as its wealth warrants as long as the great basic coal industry continues to be carried on constantly subject to interruption because of strife and discord between operators and miners. The solution of this question challenges the best thought of our nation.

Wages in the Coal Industry As Compared with Wages in Other Industries

With Special Reference to the Anthracite Situation

By Horace B. Drury

Member of the Staff, Institute of Economics [1]

1. Wages in Anthracite Mines

TABLE 1 and Chart 1 give the earnings for the year 1921 of all anthracite employees who remained at one mine from the beginning to the end of the calendar year.[2] Such full-year employes constituted two thirds of all contract miners and inside day men;[3] three fourths of all outside day men; and one third of the miners' laborers.[4]

For considerably more than half of the anthracite employes, then, Chart 1 portrays individual incomes as they were in 1921—a year in which wage rates were identical with those which prevailed down to the time of the recent 10 per cent wage advance; and in which mine operating time was almost equal to the average for a six-year period then ending. It is of interest to note the diversity in annual earnings among employes in the same occupation. This is most marked in the case of contract miners. More than 20 per cent of all full-year contract miners earned more than $2,400 in 1921 (10 per cent more than $2,700).

[1] For more than a year past, the Institute of Economics has been carrying on a series of studies in the coal industry. In view of the issues regarding the miner's wages which have arisen in connection with the Pinchot settlement, the present seemed an opportune time to bring together all available information regarding comparative earnings in the coal and other industries.

Before significant comparisons could be attempted, much difficult work had to be done in the way of arranging the detailed statistics published by the United States Coal Commission in such a way that the earnings of miners as individuals and as a body could be shown in relief against the earnings of workers in other more or less comparable occupations. This required much consolidation and sifting of the Coal Commission's figures—a task which the writer would not have ventured to undertake, had he not known something of the nature of the material through having been employed by the Commission on studies based on the earnings schedules. Both during that employment and since, the writer has been indebted to the Coal Commission and members of its staff for help and guidance on many matters. The writer, however, had no part in the Commission's actual study of wage rates or earnings; and the Commission is in no sense responsible for any of the interpretations here put upon the wage data which it collected and published.

The present investigation has been carried on entirely by the Institute of Economics. The writer has been aided at every step in the planning and execution of the study by Dr. Helen R. Wright, member of the staff of the Institute. The burden of carrying through the necessary statistical computations was assumed by other members of the staff working under the direction of Mr. Georges M. Weber. Mr. Jerome M. Ludlow drafted the charts.

[2] For the sources and method followed in obtaining Table 1, see Appendix, note 1. A small number of contract loaders and a very small number of machine miners are not included in any of the anthracite tables.

[3] That is, two thirds of the positions were filled by men who remained through the year. The per cents given in this sentence were obtained by comparing two figures, one of which stood for man pay-roll periods worked by full-year men, the other for man pay-roll periods worked by all men.

[4] The miners' laborers who remained with one company throughout the year filled only 30 per cent of the miners' laborers' positions; but if allowance be made for the fact that, owing to a great increase in the number of miners' laborers in 1921, many of the men who were employed in the later part of the year had not been in the industry in the former part, the figure becomes 33 per cent.

TABLE 1.—ANTHRACITE FULL-YEAR EMPLOYES, 1921

Per Cent of Employes in Each Group Earning Less Than Each Specified Amount Per Year

DOLLARS PER YEAR	CONTRACT MINERS	MINERS' LABORERS	INSIDE DAY MEN	OUTSIDE DAY MEN
500	*	0	0	*
600	*	0	0	.2
700	*	0	.1	1.7
800	.1	.1	.3	4.6
900	.2	.7	.6	7.1
1,000	.5	2.5	1.4	9.3
1,100	1.0	6.8	3.5	14.2
1,200	2.0	15.4	9.0	22.9
1,300	3.7	29.9	20.2	33.9
1,400	6.5	47.2	36.4	43.6
1,500	10.6	63.1	52.5	53.3
1,600	16.3	75.3	65.3	62.8
1,700	23.3	84.7	74.8	71.9
1,800	31.7	89.8	82.4	81.0
1,900	40.5	93.1	88.3	87.6
2,000	49.5	95.5	93.2	92.2
2,100	58.4	97.2	95.5	95.2
2,200	66.2	98.2	97.3	97.5
2,300	73.2	98.9	98.2	98.6
2,400	78.6	99.4	98.8	99.3
2,500	83.6	99.7	99.2	99.6
2,600	87.2	99.8	99.4	99.8
2,700	89.9	99.9	99.6	99.9
2,800	92.1	99.9	99.6	99.9
2,900	93.8	99.9	99.8	99.9
3,000	95.0	99.9	99.9	99.9
3,100	96.0	99.9	99.9	99.9
3,200	96.8	99.9	99.9	99.9
3,300	97.4	99.9	99.9	99.9
3,400	97.9	99.9	99.9	99.9
3,500	98.3	99.9	100.0	99.9
3,600	98.7	99.9	100.0	99.9
3,700	98.9	99.9	100.0	99.9
3,800	99.1	100.0	100.0	99.9
3,900	99.2	100.0	100.0	100.0
4,000	99.3	100.0	100.0	100.0

*Less than .05 per cent.

But also more than 20 per cent earned less than $1,700 (10 per cent less than $1,500). The median full-year contract miner earned $2,000.

The chart also shows the difference between the annual earnings of contract miners and those of miners' laborers, inside day men, and outside day men. The three last named groups of employes have median earnings very much the same as respects one another, but some five or six hundred dollars lower than those of contract miners. As compared with the contract miners, the miners' laborers show less difference between the earnings of the lower paid and the higher paid.[5] The day men, particularly the inside day men, show a range approximately the same as that of miners' laborers. Some 10 per cent of the outside day men have earnings distinctly lower than those of corresponding employes in the other groups.[6]

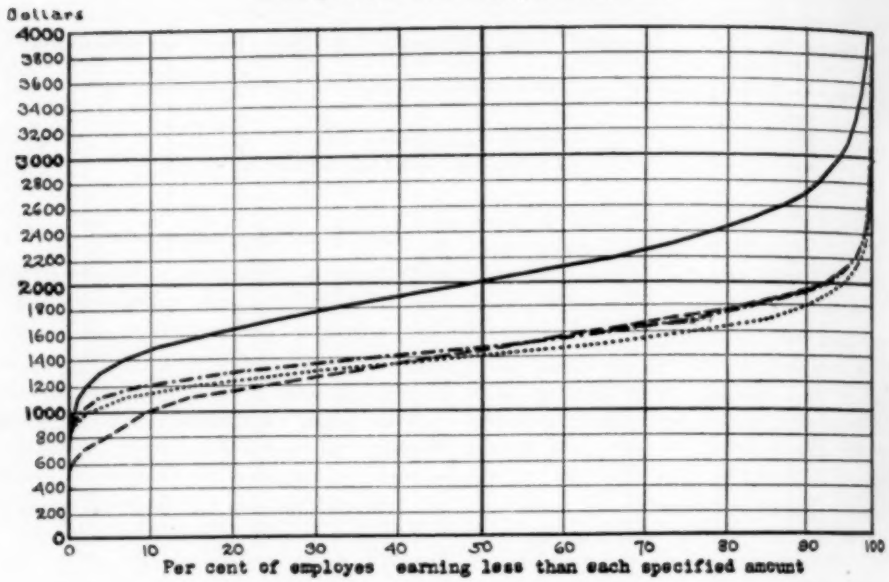
The earnings of full-year employes, as shown on Chart 1, give, however, slightly too favorable an idea of the opportunity for earnings among anthracite workers as a whole. The shifting contract miners and miners' laborers earn a little less per start than do the

[5] Among the higher paid miners' laborers, a considerable portion worked a part of the year as contract miners, it having been the rule to count as being in any given occupation all the men who made the greater portion of their earnings in that occupation.

[6] The almost 10 per cent of outside day men earning less than $1,000 are probably made up mainly of boys (slate pickers). It was intended to exclude the slate pickers (who constitute 11 per cent of all outside employes); but it has been found that they were included.

CHART 1.—ANTHRACITE, 1921—A TYPICAL YEAR

Earnings of Full-Year Employes in All Mines



The numerals which appear below show the per cent of all anthracite employes who are in each group

Contract miners	28	Inside day men	28
Miners' laborers	16	Outside day men	28

full-year employes; and the shifting day men average somewhat less hours per day and week than do the full-year day men.

A fairer and at the same time more detailed view of average earnings among the various groups of anthracite workers is conveyed, therefore, by Table 2, on which the average earnings per start or day are the average figures for both full-year and shifting employes; and the days worked per year are the days worked by full-year employees, modified to take account of the difference in days worked per pay-roll period employed by full-year, and by all employes.[7] In other words, Table 2 shows the average annual earnings of all employes, as those earnings would figure out if it were possible to add together the earnings of the shifting, as well as of the full-year employes; and if the shifting employes worked the entire year, not losing any time between jobs.

Before considering in detail the significance of the average earnings shown on Table 2, we must first bring together the best comparative figures which can be obtained for the bituminous coal industry and other industries.

2. WAGES IN BITUMINOUS MINES

The wage data for bituminous mines does not admit of as simple and thor-

[7] For an explanation of the special method employed to determine the earnings and days worked (approximate) by full-year employes in the specific day occupations, and for a table paralleling Table 2, but giving daily earnings, days worked, and annual earnings for full-year employes, see Appendix, note 2.

ough a presentation as was possible for anthracite; and, indeed, owing to the complexity of the situation in the bituminous fields, it would not be possible, granted the most complete information, to convey at one glance a conception of the earnings of the more than 600,000 bituminous miners.

In any one locality, the wage rates in bituminous mines are much more nearly standardized than are rates in the anthracite region. Yet even in a single locality, the earnings of bituminous employees vary as much or more than the earnings in anthracite mines; because the bituminous mines vary widely among themselves in the number of days of operation. For a number of years past, moreover, bituminous mines have varied radically from year to year in the number of working days. Hence, any one figure which might be set down as constituting the average earnings in a particular bituminous field could actually fit average earnings in only a few of that community's mines;[8] and even for these, a figure which would fit in one year would rarely fit in any other.

The difficulties of showing the earnings of bituminous miners are greatly increased by the fact that the bitumi-

TABLE 2.—AVERAGE EARNINGS IN SPECIFIED ANTHRACITE OCCUPATIONS*

At Rates in Effect Prior to the Recent 10 Per Cent Increase

INSIDE DAY MEN				OUTSIDE DAY MEN			
Occupation	Daily Earnings†	Days Worked†	Annual Earnings	Occupation	Daily Earnings†	Days Worked†	Annual Earnings
Drivers	$4.60	279	$1,280	Laborers	$4.25	311	$1,315
Car runners	4.70	277	1,305	Teamsters	4.40	327	1,435
Laborers	4.90	278	1,360	Stablemen	4.30	374	1,605
Masons	5.05	278	1,400	Firemen	4.75	344	1,635
Tracklayers	5.20	293	1,525	Carpenters	5.25	315	1,660
Engineers	5.05	308	1,555	Machinists	4.95	348	1,720
Timbermen	6.20	273	1,695	Engineers	5.00	351	1,750
Stablemen	4.75	360	1,705	Blacksmiths	5.30	330	1,755
Pumpmen	5.10	345	1,760	*All outside day men‡*	4.50	325	1,460
All inside day men‡	5.05	299	1,515				
CONTRACT MEN				COMBINED GROUPS			
Miners' laborers	5.75	241	1,380	All day men	4.75	312	1,485
Contract miners	7.75	255	1,970§	All contract men	7.05	250	1,755
				All employees	5.65	285	1,605

*For table giving the averages for full-year men only, see Table 7, Appendix. In figuring average daily earnings as shown above, door boys among inside men, and slate pickers among outside men, have been excluded—in order that the averages might represent adult workers only. The average daily earnings here given were computed directly from the detailed tables published in the Coal Commission's Earnings of Anthracite Miners. For the most part, the results agree with the averages which Miss Besanson has now worked out, subsequent to her Coal Commission publication. But in some cases, as timbermen, and the combined figures for all adult inside day men, and all adult outside day men, our two calculations give slightly different results. For the sake of simplicity in presentation, daily earnings have been shifted to the nearest even five cents; and annual earnings to the nearest even five dollars. Neither set of figures is necessarily correct within that range, as it has been necessary to assume that all men working a given number of days, and earning between $1,400 and $1,500, earned $1,450— and so on, for each group.

†Throughout this report, days worked by contract men in anthracite and tonnage men in bituminous mines mean starts worked—that is, calendar days. But days worked by day men in the coal industry, and by all employees in industries other than coal, mean days of eight hours. Thus a pumpman in the coal industry or a laborer in the steel industry working 12 hours on a given date would be credited with 1½ days; but a contract miner working 7 hours on the same date would be credited with one day (start).

‡Including occupations not given separately.

§This checks excellently with the figure Miss Besanson has recently arrived at of $1,922. Our figure should be higher, because we have made a correction to take account of the fact that a man's name may appear on a payroll, although during the first part—or the last part—of the period covered, he was not an actual employe.

[8] Generally speaking. In a few localities there may be exceptions.

nous mines, unlike the anthracite mines, are scattered over the greater part of the United States; and, while standards of pay are often uniform for extensive areas, there are marked differences in the rates between the North as opposed to the South on the one hand, and the East as opposed to the West on the other. There are also very important differences between communities in the average days worked. These apply to different mining areas within the same state as well as to the general averages for North as opposed to South, and states to the East as opposed to states to the West.

The most serious difficulties arise, however, out of the division of the bituminous fields into union and non-union areas. We have less complete information about rates in the non-union fields than we have for the union fields—and, indeed, the rates in the non-union areas are not well standardized. But the root difficulty lies not so much in the difficulty of determining non-union earnings in a given year, as in the fact that changes in rates in the non-union and union fields have for several years followed quite different courses; so that it is difficult to say what, over a series of years, have been the respective levels of earnings in the union and non-union areas, and altogether impossible to explain the situation by any one figure.

The United States Coal Commission has tabulated the earnings of bituminous miners for 285 mines in 1920, and for almost 2,000 mines in 1921. Unfortunately, the full-year earnings of bituminous miners in the year 1921 can be used only with the most severe limitations. The year 1921 witnessed the collapse of the war and post-war activity in the bituminous coal industry; and average days worked dropped, not only to a point far below the war level, but to 65 days below the pre-war level. Never since the Geological Survey began publishing statistics for mines in 1890 had the bituminous coal industry witnessed a depression comparable to this one; and there is no reason to expect a repetition of just this sort of thing at any time in the near future.

One could, of course, take the average earnings per start in 1921, and multiply these by a factor which would take account of the differences in mine operating time in 1921 and other years. But, to be certain with reference to the meaning of such a figure, one ought to know whether the lack of continuity in mining operations in 1921,—and the special conditions prevalent during so severe a depression, with reference to labor supply, mine and labor efficiency, practices regarding payment for dead work, deductions for unclean coal, etc.,—one should know whether such matters had any important influence on earnings per start. Earnings per start in non-union mines in 1921 would, in particular, be quite difficult to interpret; for the year 1921 was a year of severe wage cutting in the non-union fields, the exact dates of which are not available. As these cuts came within the year, average earnings for that year represent neither the high level of the beginning of the year nor the low level of the end, but some unknown intermediate figure.[9] The year 1920, indeed, witnessed increases in wage rates just as the year 1921 witnessed decreases, but the increases in the union fields were for a definite amount at a known time, and the increases in the non-union fields are believed to have

[9] Even if the dates of the cuts—which did not proceed uniformly—were all known, one would have to take account of the differences in the rate of production in every mine before and after each cut in this most chaotic of years to relate earnings during the year to wage rates at the beginning or end or any one time in the year.

been more orderly than the decreases of 1921. The earnings per day among day workers for 1921 would not be as good a guide to normal earnings as would a study of the wage rates themselves; for among day men in 1921 working time was very abnormal, some of the men working no longer than the mines, and others working practically as much as they would in a normal year.[10]

Some of the same types of objections that apply to figures for 1921 apply also to figures for 1920—aside from the fact that for 1921 there is available data for only about one seventh as many mines (and only one tenth as many workers) as have been tabulated for 1921. We have, however, something for 1920 on almost every phase of the bituminous coal situation—earnings for full-year men that have some measure of meaning, and average earnings per start or day for both tonnage and day men in both union and non-union fields. Although the year 1920 was one of unusual demand for coal, days worked were limited by car shortage to a figure which was closer to the long-time average for bituminous mines than has been the case in any other recent year. The simplest manner of approaching the complicated bituminous wage situation is, therefore, to start out with a view of earnings in 1920; and then reconstruct the picture to take account of factors which in other years and other mines affect bituminous wages, but may not have duly affected the 1920 statistics. Throughout the inquiry we will keep in mind all the information which is available regarding earnings in 1921, both for the identical mines tabulated for 1920 and for all mines.

The 285 mines tabulated by the Coal Commission for 1920 fall into six groups as shown by the table on the following page.

Theoretically, the Northeast includes everything east of the Mississippi and north of the Ohio. But it is explained in the Commission's report that Illinois and Ohio do not have adequate representation among the 285 mines. While we do not know precisely how inadequate this representation may have been, it must be assumed that Illinois, which was entirely omitted from all tabulations showing miners' starts, was quite inadequately represented.* Of all union mines in the Northeast outside of Illinois, it is estimated that 57 per cent are in Pennsylvania, 26 per cent in Ohio, and only 17 per cent in Indiana and Michigan. In view of the under-representation among the selected mines, both of Illinois and Ohio, it is evident that a large part, and possibly the great bulk, of the 53 union mines tabulated for 1920 for the Northeast were in Pennsylvania. Of the 44 non-union mines tabulated for the Northeast, practically all must have been in Pennsylvania. Throughout this study we shall think, then, of

[10] Average earnings per start in the various union fields in 1921 could profitably be compared to determine differences in earning capacity under the rates prevailing in the different areas. By comparing earnings per start in 1921 with those in 1920 for those mines for which data is available for both years; noting the differences in earnings in the year 1921 in these particular mines as compared with earnings in the various other groups of mines for which figures are available for 1921; and finally, taking account of the figures for a normal working year in the different sections, it should be possible, unless the figures for 1921 proved to be highly irregular, to arrive at some idea of the average daily and annual earnings normally to be expected in the various union areas. Such a study would, however, have been too detailed to undertake, and after all too limited in scope for the purpose of the present inquiry. The necessary information with regard to the location and character of the 285 mines tabulated for both 1920 and 1921 is, moreover, not at present available.

* We have since learned that Illinois was represented by only 3 mines.

	Number of Mines	Average Number of Employees in 1920		Average Mine Starts in 1920
		Tonnage	Day	
Union				
Northeast	53	3,825	2,153	253
Southeast	68	4,000	3,597	232
West	24	2,036	1,616	235
Non-union				
Northeast	44	2,829	2,681	273
Southeast	65	3,479	3,133	219
West	31	2,942	2,195	297

earnings in the Northeast field as standing more for Pennsylvania than for any other area; which, of course, fits in well with our desire to find a bituminous area which can properly be compared with Pennsylvania anthracite.

Theoretically, the Southeast includes everything south of the Ohio and east of the Mississippi. But we are told that Alabama, Tennessee and Virginia are not represented among the 285 mines in proportion to their tonnage. As West Virginia and Kentucky, in any case, have 74 per cent of the employees in mines in the South—Alabama, Tennessee and Virginia together having only 24 per cent, and Maryland 8 per cent—it is evident that we should think of the figures for the Southeast, whether union or non-union, as standing primarily for West Virginia and Kentucky, influenced to some degree, no doubt, by conditions in the other states, particularly Alabama.

Owing to the fact that an unduly large proportion of the 285 mines are from certain sections, as the Southeast, while some other sections are inadequately represented, as Illinois, Ohio and Alabama, it would be highly improper, even if it were otherwise desirable, to make one combination of wage data for the entire group and consider that as representative of the country. In all our use of 1920 data, therefore, we will keep the six groups of mines distinct; and for comparative purposes we will rely in the main on the one group of union mines in the Northeast whose earnings we may think of as being dominated by conditions in Pennsylvania, and whose days worked we shall relate to days worked in Pennsylvania.

Charts 2 and 3 portray annual earnings of full-year employes, the one chart representing the Northeast union group in 1920, the other all mines tabulated by the Coal Commission for 1921.[11] Chart 3 is introduced merely to show in a general way how great was the falling off of earnings in 1921. The chart, greatly understates the real demoralization of that year: for only that half of the mines which did not experience a shutdown lasting for as long as one pay-roll period could—under the definition of full-year men used in making the tabulations—have had any full-year employes.

The curves on Chart 2, on the other hand, do stand for the annual earnings of a fairly definite group of miners.

[11] For the statistics used in plotting Chart 2, see Note 3 of the Appendix. The statistics used in plotting Chart 3 may be found in the report of the Coal Commission on Earnings of Bituminous Miners.

CHART 2.—BITUMINOUS (NORTHEAST UNION ONLY), 1920—A YEAR OF SLIGHTLY MORE THAN ORDINARY EMPLOYMENT

Earnings of Full-Year Employes in 53 Selected Mines, Largely in Pennsylvania

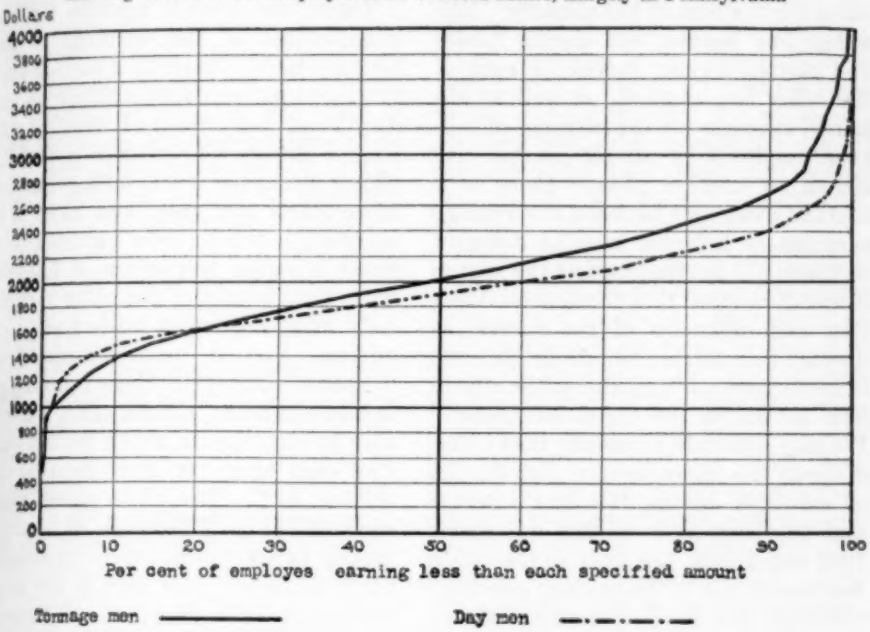
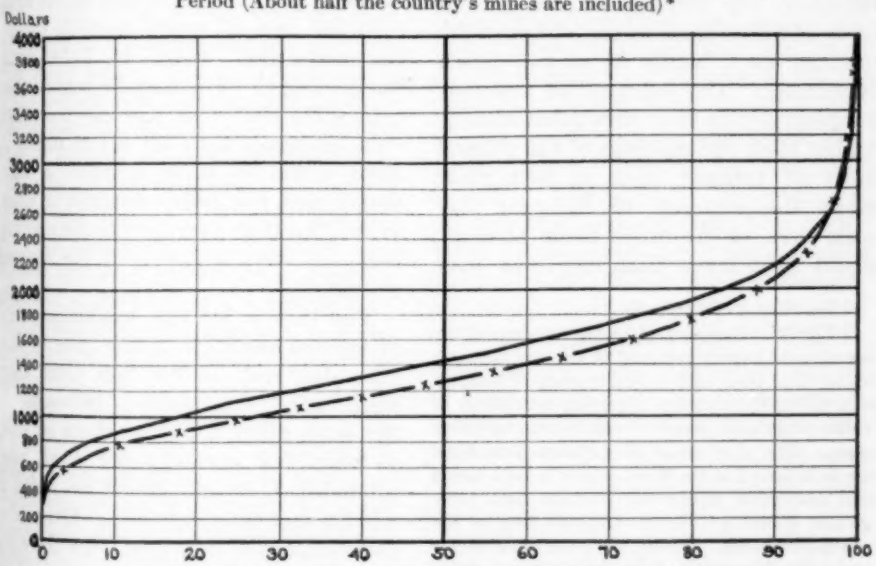


CHART 3.—BITUMINOUS, 1921—A YEAR OF GREAT DEPRESSION

Earnings of Full-Year Tonnage Employes in Those Bituminous Mines Operating Every Pay-Roll Period (About half the country's mines are included)*



*Half of the 1,928 mines tabulated.

Though dealing only with the union Northeast, the chart is not without value for the rest of the country. The writer has worked out similar tables and plotted similar curves for each of the other five sections, as well as obtained averages for the earnings of full-year employes in all six groups. As shown in another place,[12] there is a marked difference between the average earnings of full-year men in different sections; but in constructing the curves it was discovered that the general direction and character of the curves, as distinct from their absolute height, was in most cases quite similar to the curves here shown for the union Northeast.[13] We may conclude, therefore, that Chart 2 shows the characteristic distribution of earnings among full-year tonnage and day men as it worked out under 1920 conditions, not only in the union Northeast, but in the country generally —though the level of earnings shown is that of the union Northeast only.

Chart 2 does not, however, fairly represent the earnings of the general body of bituminous miners either in the country as a whole or in the union Northeast. The earnings of full-year tonnage men in 1920 were substantially higher than the earnings of the general body of tonnage men in that year; while the earnings of full-year day men were, in the union fields at least, about $100 lower than day men may reasonably expect to receive under present rates.

There are several reasons for the exaggeration of the earnings of the tonnage men. One is that the full-year tonnage men probably contain an unduly large proportion of machine cutters, a group who receive materially higher wages per start, work somewhat more starts per year, and have, it is believed, a much lower turnover (and hence a larger proportion of full-year men) than is true of the other numerically more important loaders and pick miners. Second, among members of the same occupation, there is probably, in bituminous as in anthracite, a difference in earnings by which the full-year men earn more per start than do the shifting men. These two causes alone account for a differences of approximately 14 per cent between the earnings per start of full-year men in the union Northeast and those of all tonnage men in the same mines. In the third place, while the average days worked in the year 1920 by the 285 mines seem —in the case of every section except the non-union West—to have come fairly close to what may be regarded as typical for that year, the selected mines —in common with all other mines in 1920—seem to have worked a little longer than has been common in other years (the 1920 average for the country being six days in excess of the six-year average).

The reason for the understatement of typical earnings in the case of full-year day men is the fact that there were very substantial increases in the wage rates of day workers in 1920, so that the earnings for that year, unmodified, are no longer an index to what a day man can earn. Otherwise, the earnings of day men, like the earnings of tonnage men, would have been considerably exaggerated,—due, no doubt, to a greater opportunity to work

[12] See Note 4 of Appendix.

[13] The little hump by which the earnings of the lowest paid twenty per cent of the day men are higher than those of the similar group of tonnage men is—in these charts depicting conditions in 1920—practically peculiar to the Northeast union group. The chief other divergences from type are to be found in the West, where in both union and non-union mines the tonnage men show greater diversity than do tonnage men in the union Northeast. Among day men those in the non-union Northeast show slightly more diversity among themselves, while those in the non-union West show less than do men of the same group in the union Northeast.

on the part of full-year as opposed to shifting day employes. The statements regarding the earnings of day men apply specially to the union fields. In the non-union fields, we can say that the earnings of full-year day men in 1920 constitute an understatement of what they could have earned at the rates in effect at the end of 1920; but owing to the frequent raising and lowering of non-union rates it is impossible to say what non-union day men now tend to receive, having in mind a period of years.

In view of the many possibilities of over- or understatement involved in the choice of what we would like to regard as a representative year, and as representative mines, we cannot safely allow our final figures for average earnings in bituminous mines to rest on the annual earnings of full-year—or even of all—employes, in any one of the small groups of mines tabulated for 1920, or the much larger body of mines tabulated for the depressed year of 1921. Nor would it be satisfactory to start with actual data for annual earnings and make all manner of modifications in those earnings to purge them of their unrepresentative character. A simpler way of coming to definite conclusions with reference to this whole problem is to start out with the idea, not of showing what any one group of miners earn in some special year, but of calculating what the miners throughout some considerable section of the country might reasonably expect to average under the present wage rates, assuming a year of average operating conditions. Though in a sense this will be a hypothetical figure, it should come closer to representing the probable earnings of miners than any figures taken unmodified from the books of particular companies.

Table 3, page 324, shows each step in the process of arriving at representative earnings per day and per year for each of the six classes of bituminous mines, assuming the present wage rates and the conditions respecting working time which prevailed from 1916 to 1921—a period during which the average days worked for the country as a whole was identical with the average for the six pre-war years 1910–1915, and within one day of the average for the thirty-two-year period 1890–1921.

Though Table 3 is largely self-explanatory, several supplementary explanations should be made. In computing the average days worked, as shown in Space A, the figures for the Northeast are for the state of Pennsylvania only, it having already been explained that the mines tabulated for 1920 were largely (in the case of non-union mines, entirely) in Pennsylvania, and it being desired to present a picture as close as possible to the situation in Pennsylvania, for the sake of making comparisons with Pennsylvania anthracite. The days worked in the union Northeast have been put at 20 days lower than the days worked in the non-union Northeast, there having been that much difference in working time between union and non-union Pennsylvania in 1916–1921, as well as between the union and non-union mines tabulated for this area for 1920. The figure for days worked in the Southeast is a weighted average for West Virginia and Kentucky, the two states in which we are most interested, and which are most largely represented among the mines tabulated. The 68 union mines in the Southeast worked 13 days longer than the 65 non-union mines; but we have no reason for supposing that this represents a general difference between the operating time of union and non-union mines in West Virginia and Kentucky. The situation there is very chaotic. Hence, both the union and non-union areas in the Southeast are credited in the table with the same number of average days worked.

TABLE 3.—ESTIMATED AVERAGE EARNINGS AT PRESENT WAGE RATES IN THE PRINCIPAL BITUMINOUS COAL FIELDS ASSUMING A WORKING YEAR EQUAL TO THE AVERAGE FOR 1916–1921*

	Union			Non-Union		
	Northeast	Southeast	West	Northeast	Southeast	West
Working Time of Mines and Tonnage Men						
A. Average days worked during 1916–1921 as computed from statistics of U. S. Geological Survey	226	204	209	246	204	238
B. Above average increased by 9 days to offset inclusion of a few mines whose broken operation unduly depressed the general average	235	213	218	255	213	247
C. Last figures increased by 5 per cent to obtain mine-starts as opposed to mine full-time days	247	224	229	268	224	259
D. Last figures reduced by 10 per cent to allow for absence and obtain man-starts as opposed to mine-starts	222	202	206	241	202	233
Earnings of Tonnage Men						
E. Earnings per start in 1920	$7.98	$7.72	$8.91	$8.41	$7.84	$8.12
F. Last figures increased by 3.4 per cent to indicate what earnings would have been had the 15 per cent increase effective April 1 been in effect the entire year	$8.25	$7.98	$9.21	$8.70	$8.11	$8.40
G. Figures in F multiplied by figures in D to obtain estimated annual earnings at present rate	$1,832	$1,612	$1,897	$2,097	$1,638	$1,957
H. Earnings per start in 1921				$6.71	$7.10	$8.02
J. Figures in H multiplied by figures in D to obtain indication of lower earnings in non-union fields during times of depression	For non-union fields only			$1,617	$1,434	$1,868
Working Time and Earnings of Day Men						
K. Figures in B multiplied by a factor to give days worked by day men	277	268	273	286	268	282
L. Earnings per day in 1920	$6.36	$6.12	$6.53	$6.36	$5.76	$6.37
M. Last figures increased by 14.5 per cent to indicate what earnings would have been had the 5+ per cent increase effective April 1 and the 25 per cent increase effective about August 1 been in effect the entire year	$7.28	$7.01	$7.48	$7.28	$6.60	$7.29
N. Figures in M multiplied by figures in K to obtain estimated annual earnings at present rate	$2,017	$1,879	$2,042	$2,082	$1,769	$2,056

SUMMARY

	Union			Non-Union				
				Daily Earnings			Annual Earnings	
	Daily Earnings	Days Worked	Annual Earnings	High	Low	Days Worked	High	Low
Tonnage men:								
Northeast	$8.25	222	$1,830	$8.70	$6.70	241	$2,095	$1,615
Southeast	8.00	202	1,610	8.10	7.10	202	1,640	1,435
West	9.20	206	1,895	8.40	8.00	233	1,955	1,870
Day men:								
Northeast	7.30	277	2,015	7.30	....	286	2,080	....
Southeast	7.00	268	1,880	6.60	....	268	1,770	....
West	7.50	273	2,040	7.30	....	282	2,055	....

* For further explanations regarding this table, see text.

In the West the average days worked for the union states is the weighted average for all union states, and the average days worked for the non-union area, the weighted average for all non-union states. The state of Washington was too mixed to include in either average.

During an extended study of the subject of irregularity of employment for the Coal Commission, the writer reached the conclusion that the average days worked, as given by the Geological Survey, paints the situation in the bituminous coal industry a little too black. For a more complete statement of the reason for increasing the Geological Survey averages by 9 days as is done in Space B, the reader is referred to the Coal Commission report on Irregularity of Employment in the Coal Industry.

The statistics of the Geological Survey are all in terms of full-time days; those showing the earnings of tonnage miners are all in starts. No one has much statistical evidence with regard to the ratio between full-time days and starts in the bituminous coal industry, but on the basis of what is known on the subject the safest course seemed to be to increase the number of full-time days by 5 per cent to obtain starts. There is, of course, an error involved in making the increase uniform for all fields, but over a five-year period this probably would not introduce a great discrepancy.

The reduction of mine starts by 10 per cent to give man starts, as is done in Space D, has strong statistical backing in view of the nearly uniform absence rate of 10 per cent among tonnage men in almost all parts of the country. There are some areas where this figure should be nearer 15 per cent.

The explanation given in Space F is sufficient for the union fields. The wage increases in 1920 in the non-union fields are definitely known only to the extent that certain increases took place in the first or second half of the year. But it is believed that the non-union areas, under the keen competition for labor prevalent in 1920, roughly paralleled the union areas in following the awards of the Bituminous Coal Commission. To the extent that the non-union fields made wage advances later than, or in excess of, those in the union fields, the adjustment in earnings per start, made to bring the non-union figures up to what they would have been had rates been at their highest level throughout the year, would be too small.

In 1921, there were great reductions in non-union wage rates; and then in 1922 wage rates were put back either to the level of the end of 1920, or almost to that level. In 1923, therefore, earnings in non-union mines must have been at rates not far from the amounts shown in Spaces F and G. It is uncertain, however, how long these rates will continue; and it is known that between 1920 and 1923 they sank to a much lower level. Hence, the figures in Spaces H and J are introduced to show something of that lower level. They do not represent the bottom, because rates were at a high level during the fore part of 1921, also actual days worked were, in 1921 greatly reduced. But the figures in Space J do show what annual earnings would be in non-union fields, assuming a normal year as respects days worked—and wage rates as they averaged through 1921.

Average earnings per start were also computed for union mines in 1921, but coming close, as they did, to the figures for 1920, their presentation on the table would have led to more confusion than real help. In the Southeast group, average earnings per start in 1921 were $7.98, a figure exactly equal to that for 1920, as corrected for the

April 1st increase. One would have expected a higher figure, because the car shortage of 1921 led to short mine starts in many West Virginia mines. But for some reason this did not affect the average earnings per start. Perhaps the mines reporting were less affected by car shortage in 1920 than other mines; which would, of course, make them better suited for use in determining long-time earnings—as opposed to earnings during a period of peculiar transportation conditions. Perhaps earnings per hour actually declined, and only the longer starts kept average earnings per start from declining.

In the Western union group, average earnings per start in 1921 were $9.16,[14] or within 5 cents of the corrected average for 1920. In the Northeast, average earnings per start in 1921 were $7.72, or 53 cents lower than the corrected figure for 1920. Had we taken 1921 as the base for average earnings per start in the union Northeast instead of 1920, we would, therefore, have arrived at a figure for annual earnings of $1,715 in place of $1,830. As to whether the situation in 1920 or in 1921 should be considered as the more typical is not wholly clear. Our table assumes, however, that 1920, as the more normal year as respects continuity of mine operation, was the better year to take. The falling off in earnings in the union Northeast was altogether accounted for by a decline in the earnings of loaders—machine cutters and pick miners earning more. It has been suggested that a lower efficiency among loaders might have been caused by the entering into the coal industry of a considerable number of new men—which occurred in 1921—due to the depression elsewhere.

As a check on the representative character of the earnings per start in the 285 mines, as compared with earnings in all mines, it may be stated that the average earnings per start in all union mines tabulated for 1921, whether tabulated for 1920 or not, were $7.68. This was 4 cents per start lower than the earnings shown for the selected Northeast mines, lower by 30 cents per start than the earnings shown for the selected Southeast mines, and lower by $1.48 per start than the earnings for the selected mines in the West. As approximately 56 per cent of the country's miners are in the Northeast—and a larger proportion of the country's union miners—and as only 13 per cent are in the West, it will be seen that the average for the country indicated only a small distortion due to the selection of mines in which average earnings per start were greater than in the rank and file of mines.

The average earnings per start among all non-union mines tabulated for 1921 were $6.96, or 25 cents higher than the average for the selected Northeast mines, 14 cents lower than the average for the selected Southeast mines, and $1.06 lower than the average for the selected Western mines. In view of the relatively greater importance of non-union mines of the South, here again the correspondence is quite close.

Before discussing the results shown by Table 3, with respect to the earnings of tonnage men, the figures for day men should be explained. The time worked by day men was, in the Coal Commission's studies, measured in terms of full-time days of eight hours each. It was found that day men, practically without exception, averaged more eight-hour days than their mines; but the ratio varied from a figure of very little over 100 per cent, in the

[14] In the original table upon which this average is based the detailed figures for all tonnage men do not agree with the detailed figures for the specific tonnage occupations, and it is possible that this average should have been $8.93 instead of $9.16.

case of mines which ran practically the full year, to 150 or even 200 per cent, in the case of mines that ran less than one half of a year. In some cases, indeed, the time operated by the mines had little to do with the time worked by the day men, the men working whether the mine was loading coal or not. The figures in Space K of Table 3 were obtained by applying to the figures in Space B the ratio between mine-days and man-days found to hold true for mines operating that number of days in 1920. Almost the same ratio would have held true for 1921 (so far as the adjustments made in this table are concerned). Space L gives the actual daily earnings of all the men in the selected mines in 1920. No data is available on this point for 1921. The process of adjustment in Space M is a little more complicated, and not quite so satisfactory as the process of adjustment in the case of tonnage men. The second wage advance for day men in 1920 did not come uniformly on August 1, but came in some sections early in July, and in others not until September. Where advances came later than August 1, as was true of places in the West, the adjustment should have been a little greater than it was; and the rates in the union West should probably be a little higher than they are. Thus, had all the West made the adjustment on August 21, as did Wyoming, the average earnings per day should have been adjusted to $7.58, instead of $7.48.

The average day rates, as adjusted and presented in Space M, both are checked by, and themselves help to explain, the actual union scales. The rate of $7.28 obtained for the union Northeast is 22 cents an hour less than the Hocking rate of $7.50 for motormen, brakemen, truckmen and drivers, and 3 cents greater than the Hocking rate of $7.25 for inside labor. It may further be compared with the Hocking rate for blacksmiths of $7.80, for carpenters of $7.45, for firemen of $7.25, and for outside laborers of $7.24. The union mines in Pennsylvania, which largely influence the average for the selected mines, have inside rates similar to the Hocking rates; but there is no standard scale for outside men. A rate of $7.28, while perhaps a little low for an average in the Hocking area, might check more closely with the average rate in mines farther East.

The rate for the Southeast is, as might be expected, lower than that for the Northeast; the rate for the West higher. Non-union rates prove to be identical in the Northeast with the union rate; in the Southeast, considerably lower, and in the West, also, a little lower.

What, in a few words, does Table 3 indicate with regard to the daily and annual earnings of bituminous miners? The table practically leaves out of consideration earnings in Ohio, Illinois and Alabama; but it should show something with regard to a miner's reasonable expectation of earnings in Pennsylvania (Northeast), West Virginia and Kentucky (Southeast), and the union and non-union West.

While stress must not be laid on any fine detail in the figures, several things stand out from all the analysis as quite clear:

(1) There can be no doubt but that day men in general earn less per day but more per year than the tonnage men, the difference being due to the fact that the day men work longer than the tipple, and the tonnage men less.

(2) Non-union tonnage men at the close of 1920, and in many cases in 1923, earned approximately as much—and perhaps more—per start than did union miners in the same sections. In a number of non-union areas where working time is unusually good, annual

earnings, figured on rates in effect at the close of 1920, must have been substantially higher than those common in neighboring union fields. However, at the rates paid in 1921, and still more at the rates paid at the close of 1921, earnings per start and annual earnings were substantially lower in non-union fields than in the union fields.

(3) The table bears out the well-known fact that wage rates and earnings in the East are higher than in the South, but not so high as in the West. Some exceptions to this may occur in the non-union West.

Probably more detailed conclusions than those made above would be warranted by the figures. But, after all, this would be to emphasize fine distinctions between the averages for different sections, when, as a matter of fact, much more important differences exist within each section itself.

To come now to a figure which can be used to represent bituminous earnings, as contrasted with anthracite earnings, or earnings in other industries. For this purpose we will use the figure of $8.25 per start, or $1,830 a year, for tonnage men, and $7.30 a day, or $2,015 a year, for day men calculated for the union Northeast—primarily Pennsylvania—(not altogether forgetting, however, that, had we taken average earnings per start for the same mines in 1921, in place of average earnings in 1920, the figure would have been $7.72 per start, or $1,715 per year). Going, finally, a step further, and viewing Table 3 as a whole, without special reference to any one section, we may conclude that the best conception of the earnings of a bituminous tonnage man is about $8 per day, and of a day man, $7.50 or a little less; the average annual earnings for tonnage men varying from about $1,600 to about $2,000, according to the opportunity for work in the particular field, whereas the annual earnings of day men center, with a greater degree of stability, in the neighborhood of $2,000.

However, as respects both tonnage and day men, these averages cover up very great differences between earnings in different localities, between earnings in different mines in the same locality, and to a considerable extent between earnings among different individuals in the same mine—many men earning much more than the average, and many much less.

3. WAGES IN THE RAILROAD INDUSTRY

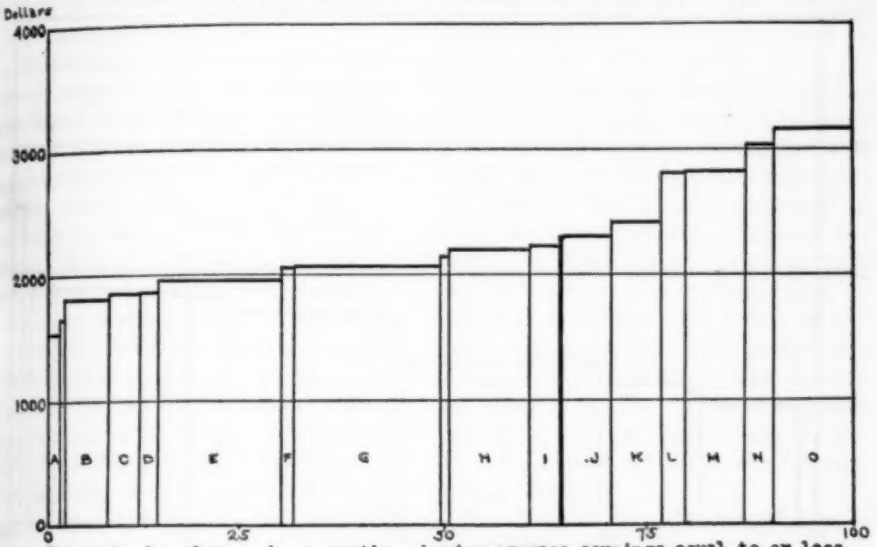
The easiest and best comparison which can be made between the coal industry and another industry is the comparison with the railroad industry. The industries are alike in this, that both are industries of such vital public importance that stoppages are a serious matter; and there has accordingly come about in both a development of wage fixing by arbitration or conciliation or by the decisions of public boards. The anthracite coal industry and a major part of the bituminous coal industry are strongly organized. So are the train service employes on railroads; but the railroads also have their weakly organized shop crafts, while the bituminous coal industry has its non-union areas.

Chart 4 shows the average earnings during the year September 1, 1922, to August 31, 1923, of each group of train service employees.[15] The width of the bars is proportionate to the number of employes in each occupation. In comparing the earnings of train service employes with those of anthracite or bituminous miners, it must be remembered that Chart 4 is not a frequency chart of the same type as Charts 1, 2

[15] Classified in the statistics of the Inter-State Commerce Commission as VI (a). Annual averages were obtained by adding monthly averages.

CHART 4.—RAILROAD TRAIN SERVICE, 1922–1923

Average Earnings September 1, 1922–August 31, 1923, by Occupations



Occupation	Average Annual Earnings	Occupation	Average Annual Earnings
A. Switch tenders	$1545	H. Firemen, freight	$2210
Hostlers' helpers, outside	1660	I. Firemen, passenger	2245
B. Firemen, yard	1850	Conductors, assistant	2295
C. Brakemen, passenger	1870	J. Conductors, yard	2310
D. Hostlers, inside	1880	K. Engineers, yard	2435
E. Brakemen, yard	1980	L. Conductors, passenger	2805
F. Baggagemen, passenger	2065	M. Conductors, freight	2815
G. Brakemen, freight	2085	N. Engineers, passenger	3030
Hostlers, outside	2140	O. Engineers, freight	3170

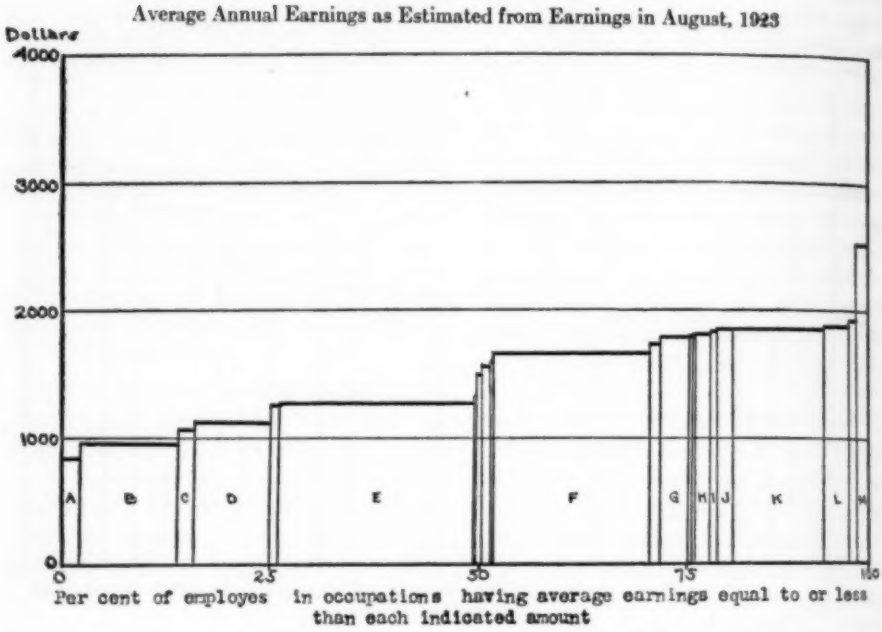
and 3. Among the different individuals represented by the average for a single occupation, there may be the greatest variation in individual earnings. The most accurate basis for comparing railroad and coal earnings is, therefore, to compare Chart 4 with the figures for average earnings shown on Tables 2 and 3, the figures on both sides of the comparison then being on a comparable basis.

Chart 4 represents the highest paid branch of the railroad service. Chart 5 shows the very different level of earnings which prevails in railroad shops.[16] Chart 5 is more of a frequency chart

[16] The figures are based on the statistics of the Interstate Commerce Commission for Group IV, *Maintenance of Equipment and Stores*. Owing to the shopmen's strike of July, 1922, it would not have given a fair idea of the earnings of shopmen to have taken average earnings for the twelve months, September, 1922, to August, 1923, as was done in the case of train service men. Beginning in July, 1922, the force of shopmen was, for a time, very greatly reduced in number; although for this reduced number, the pay, owing to overtime rates, was abnormally high (judged by the new wage level). Overtime continued to be worked in substantial amounts well into 1923, but by August, 1923, the overtime had been reduced almost, though not quite, to the amount worked a year before. An examination was made into statistics for the number of

CHART 5.—RAILROAD SHOPS

Average Annual Earnings as Estimated from Earnings in August, 1923



	Daily Earnings	Days Worked	Annual Earnings
A. Regular apprentices	$2.95	288	$845
B. Common laborers	3.20	307	980
C. Coach cleaners	3.20	334	1075
D. Laborers	3.20	352	1130
Helper apprentices	4.35	292	1265
E. Skilled trades helpers	4.20	308	1295
Coal passers	3.75	353	1320
Stationary firemen	4.30	350	1505
Gang foremen laborers	4.65	339	1585
Carmen D	5.55	290	1605
F. Carmen C	5.45	309	1685
Carmen B	4.75	367	1745
G. Carmen A	5.95	302	1790
Molders	6.50	280	1815
Stationary engineers	5.20	350	1825
H. Blacksmiths	6.15	296	1825
Electrical workers C	5.30	340	1825
I. Electrical workers B	5.65	328	1850
J. Sheet-metal workers	6.15	303	1855
K. Machinists	6.10	305	1870
L. Boiler makers	6.15	307	1890
Electrical workers A	6.05	318	1930
M. Gang leaders	7.35	343	2520

employes, hours worked, and the amount of overtime paid for many months back; and it was decided that August, 1923, was a fair month to use as a basis. Earnings and hours for that month were therefore multiplied by a factor which would give a twelve-month year (account being taken, of course, of the fact that August, 1923, had considerably more than its share of working days).

It would not have been fair to have taken the earnings for the year prior to July, 1922; for the rates of shopmen were then higher.

than is Chart 4. For, in the case of the shop crafts, it may be assumed that men in a given occupation receive about the same hourly pay.

The average annual earnings of train service employes for all occupations was found to be $2,295; the average earnings of shopmen, $1,480. The average daily pay of the shopmen was $4.75, and the average days worked, 313.

A day as here defined means eight hours. Where overtime is worked at punitive rates the average earnings per eight hours worked would, of course, be greater than the basic pay times eight.

The figures on Charts 4 and 5 include all sections of the United States; but, except in the case of common laborers, where the pay in the South is less, the wage rates in railroad work are practically uniform over the country.

4. WAGES IN THE STEEL AND CLOTHING INDUSTRIES

Next to the railroads, one of the most important comparisons between the coal industry and other industries would be a comparison between the coal and steel industries. Unfortunately, we have no data within recent years on annual earnings in the steel industry. For the steel industry it has been necessary to take the figures of the Bureau of Labor Statistics for one pay-roll period, usually in October, and find out how much this would be on an annual basis. The figures given for actual earnings were, moreover, so liable to distortion, due to labor turnover (a considerable fraction of the men not being employed through the entire pay-roll period), that it was necessary to take full-time weekly earnings as the basis for computation. To allow for a certain amount of lost time, due to holidays, as well as shutdowns or absence, the figure for weekly full-time earnings as published by the Bureau has been multiplied by 44 to obtain something approaching an annual figure. This may be in excess of actual annual earnings.

The dates of the more recent figures for earnings in the steel industry are 1920 and 1922. By the year 1922, earnings had probably not recovered from the drastic cuts of 1921 as much as they had recovered by 1923. Earnings are shown on Table 4, therefore, for both 1920 and 1922,—the former representing the peak of earnings, or substantially the peak; the latter representing earnings when there was still a measure of depression in rates. It

TABLE 4.—AVERAGE EARNINGS (IN THREE OCCUPATIONS) IN SELECTED STEEL PLANTS AS FIGURED FOR FORTY-FOUR FULL-TIME WEEKS *

Occupation	Data Based on October, 1922			Data Based on October, 1920		
	Earnings Per Eight-Hour Day	Eight-Hour Days in 44 Full-Time Weeks	Total Earnings	Earnings Per Eight-Hour Day	Eight-Hour Days in 44 Full-Time Weeks	Total Earnings
Common laborers ..	$2.70	368	$985	$4.00	382	$1,535
Switchmen.....	3.50	396	1,390	4.95	381	1,885
Engineers and cranemen.....	4.05	399	1,615	5.80	384	2,235

* Computed from statistics of the U. S. Bureau of Labor Statistics for blast furnaces, open-hearth furnaces and bar mills, as reported in the Monthly Labor Review.

TABLE 5.—AVERAGE EARNINGS OF EMPLOYES IN CHICAGO CLOTHING INDUSTRY*

	DAILY EARNINGS	DAYS WORKED	ANNUAL EARNINGS
Tailor shops:			
Time workers	$6.80	209	1,425
Piece workers	8.90	209	1,855
Total	8.30	209	1,730
Adding in auxiliary employes	8.05	209	1,685

* The average annual earnings for time workers and piece workers in each department were calculated by the employers by taking average earnings during the four best consecutive weeks and making an allowance for unemployment (averaging 26 per cent). The figures as submitted were for the year 1920; but as it was stated that rates are now about 7 per cent lower than in 1920, all earnings have been reduced by 7 per cent. The wage figures were for 5,382 employes in tailor shops only. It was stated that about 15 per cent of the employes were in other parts of the establishments and earned about as much as the week workers in the tailor shops. The last line of figures has been computed for all the workers, including the 15 per cent of auxiliary workers.

must be remembered: first, that there have been times when men in the steel industry earned far less than full-time earnings; and second, that, with the change from a 12-hour to an 8- or 10-hour day now going on, annual full-time earnings may be somewhat less than they were before the change began.

Table 5 gives annual earnings in the Chicago clothing industry.

5. WAGES IN THE BUILDING AND OTHER ORGANIZED TRADES

Table 6 shows how wide are the variations in hourly wage rates in organized trades from city to city. For the purpose of comparison with wages in the coal industry, a particular city has, in the case of each occupation, been picked out, the aim being to select a city which was fairly representative of the range of rates for that occupation, and, if possible, reasonably close to the coal fields. The names of such selected cities are italicized on Table 6, and the rates for these cities only are used in subsequent comparisons.

No one knows how long men in many of the organized trades work. The Associated Building Trades Council has estimated lost time in the building trades at 75 to 100 days. This would leave a working year of about 36 full-time weeks. At Cedar Rapids, Iowa, a survey showed that carpenters had eight months employment as carpenters, but had collateral employment for an additional two months. There are doubtless numerous individuals in the building trades who have employment for practically the whole year. On the other hand, there must be some who work much less than 36 weeks.

In the absence of comprehensive information on days worked, there are shown on Table 6 figures for annual earnings computed on three bases, one for 48 full-weeks employment, one for 36 full-weeks employment, and one for 30 full-weeks employment.

6. COMPARISON OF WAGES IN THE COAL AND OTHER INDUSTRIES

Chart 6 brings together in one place most of the facts which have been brought out in this paper regarding wages in anthracite mines and in those outside occupations which are more or less comparable with occupations in mines. No occupations from among the highly paid train service group have been listed on Chart 6. But several railroad occupations which are of special interest for comparative pur-

TABLE 2.—UNION WAGE SCALES IN PRINCIPAL AMERICAN CITIES*

OCCUPATION	CITIES CLASSIFIED ACCORDING TO RATE IN CENTS PER HOUR																
	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to 109	110 to 114	115 to 119	120 to 124	125
Carpenters						Atl.	Bir.	Min.		Bal. N. O.		S. F. Seat. Buf. K. C.	Bos. Cin.	Wash. Den. N. Y. *Phil.* L. A.	Det.	Pitt.	Chi. Clev. St. L.
Portable and Hoisting engineers												*Phil.*†					
Hod carriers					N. O.	Bos. Chi.	Wash. Den. Det. S. F.	Cin.	Bal. *Clev.*	K. C.		Phil. Pitt. St. L.					
Building laborers	Cin.	Bal. N. O. St. L.	Min.	Wash. Det. *Pitt.* S. F. L. A. Seat.	Bos. St. L.	Bos. Chi. K. C.	N. Y.	N. Y.	Clev.			Pitt.					
Blacksmiths, manufacturing shops								Bos. N. O. Seat.	N. Y.	*Pitt.* St. L. S. F.		Phil. Buf.		Chi.			
Machinists, manufacturing shops					Clev.	Cin. St. L. L. A.	Bir. N. O. Phil.	Wash. *Bos.* N. Y. Seat. S. F.	N. Y.	Chi. K. C.		Pitt.					
Motormen (maximum rates)	Atl. Cin.	Bir. N. O.	Wash.	Bos. *Clev.* Phil. S. F. Seat.	Pitt. St. L.	Chi.											

EMPLOYMENT ASSUMED	ANNUAL EARNINGS (IN DOLLARS) YIELDED BY ABOVE RATES, ASSUMING DIFFERENT NUMBERS OF FULL-TIME WORKING WEEKS (44 HOURS EACH)‡																
48 weeks	950	1,056	1,162	1,267	1,373	1,478	1,584	1,690	1,795	1,901	2,006	2,112	2,218	2,323	2,429	2,534	2,640
36 weeks	713	792	871	950	1,030	1,109	1,188	1,267	1,346	1,426	1,505	1,584	1,663	1,742	1,822	1,901	1,980
30 weeks	594	660	726	792	858	924	990	1,056	1,122	1,188	1,254	1,320	1,386	1,452	1,518	1,584	1,650

* Based on statistics of the U. S. Bureau of Labor Statistics. The cities whose names are italicized are those selected for Chart 6 as representative for the given occupation.
† Owing to the many classes of portable and hoisting engineers, only the one rate for the one city selected is given.
‡ The annual earnings are computed on the basis of the lowest figures in the range. For any given city, the annual earnings, assuming a given working period, would, therefore, be the figure given, or a figure between that given and the one in the column immediately to the right.

poses are here shown for the first time. Prominence is given on Chart 6, not to the relationship between annual earnings, but to that between earnings per eight-hour day—or per start in the case of contract and tonnage men. However, the figures to the right show opportunity for annual earnings.

A glance at the upper portion of Chart 6 brings out the fact that the anthracite workers, prior to the 10 per cent advance, did not exhibit the same extremes of low hourly wages which could be found among the lowest paid occupations in some other industries. The lowest anthracite rate is that for outside labor.[17] This was much higher than the rate paid common labor in the steel mills in 1922, and 25 cents higher than the rate paid in these mills at the peak in 1920. Of course, the steel worker—who was employed for 12 hours a day—worked many more eight-hour days than did most anthracite workers; so that, allowing for only 44 full-weeks employment, the steel worker would have made in 1920 $1,535, or $220 more than the figure for anthracite outside labor. In 1922 the same steel laborer would, however, have worked 368 eight-hour days to earn only $985.

Track and section labor on the railroads, an occupation here mentioned for the first time, which, in August, 1923, comprised the huge total of 247,000 men, averaged throughout the United States only $2.75 a day—or only 65 per cent of the rate of anthracite outside labor prior to the late wage advance. How many days the track and section laborers worked cannot be stated, for their numbers fluctuated widely during the year. But it is hardly to be supposed that they worked a great many more eight-hour days, if as many, as did the anthracite laborers who worked 311 days. Likewise, railroad shop laborers, with $3.20 a day, or $1,130 a year, were below anthracite laborers both in daily and annual earnings; though the shop laborers had to work 352 eight-hour days. Teamsters and stablemen in railroad employ, and also stationary firemen, had daily and (so far as known) annual earnings definitely below wages for similar work in mines.

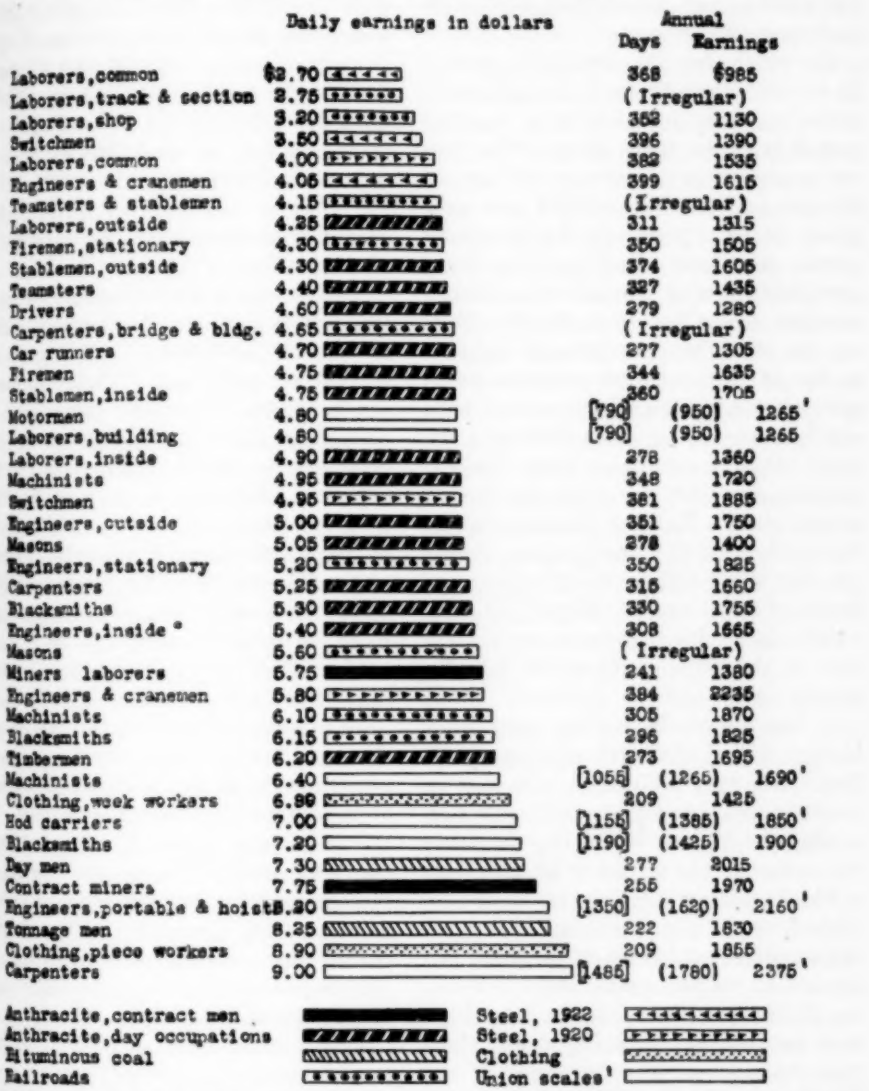
Yet it cannot be said that the wages of laborers in anthracite mines exceeded those paid to laborers in all other industries. For much labor in other industries is paid for at rates about as high, and sometimes higher, than the rate in the mines. Thus in the city of Reading (not hitherto mentioned), it was learned that, while 36 cents an hour was a basic rate ($2.88 for eight hours), many of the smaller concerns, where more versatile work was required, paid from 36 to 45 cents. Foundry labor was paid 40 cents an hour or more. Outside labor, as opposed to labor in shops, was paid 45 to 50 cents. Laborers in the building trades, where hard physical work was required, might be paid, perhaps partly by a bonus, considerably more. Much of the labor in Reading is on more than eight hours, so that the earnings per day among the higher, but not necessarily the highest paid groups would, under certain conditions, be about on a parity with the earnings of anthracite laborers.

Wage rates in Reading are lower than in most cities. Building laborers in Pittsburgh, picked out as typical, earn $4.80 for an eight-hour day, or 55 cents above the old anthracite average, and 10 cents above the new one. Hod carriers in cities receive much more.

[17] Occupations employing boys are not shown, nor are many other day occupations; but the rates here exhibited may be regarded as typical for adult workers. The inside labor group probably includes a good many miscellaneous workers who have a status higher than that of "labor."

CHART 6.—COMPARISON OF WAGES PER EIGHT-HOUR DAY AND PER YEAR IN SPECIFIC ANTHRACITE OCCUPATIONS, WITH WAGES IN THE NEAREST BITUMINOUS FIELDS AND IN COMPARABLE OCCUPATIONS IN OTHER INDUSTRIES

Anthracite Wages as they were Prior to the recent Ten Per Cent Increase


Daily earnings in dollars
Annual
Days
Earnings
Laborers, common $2.70 368 $985
Laborers, track & section 2.75 (Irregular)
Laborers, shop 3.20 352 1130
Switchmen 3.50 396 1390
Laborers, common 4.00 382 1535
Engineers & cranemen 4.05 399 1615
Teamsters & stablemen 4.15 (Irregular)
Laborers, outside 4.25 311 1315
Firemen, stationary 4.30 350 1505
Stablemen, outside 4.30 374 1605
Teamsters 4.40 327 1435
Drivers 4.60 279 1280
Carpenters, bridge & bldg. 4.65 (Irregular)
Car runners 4.70 277 1305
Firemen 4.75 344 1635
Stablemen, inside 4.75 360 1705
Motormen 4.80 [790] (950) 1265'
Laborers, building 4.80 [790] (950) 1265
Laborers, inside 4.90 278 1360
Machinists 4.95 348 1720
Switchmen 4.95 381 1885
Engineers, outside 5.00 351 1750
Masons 5.05 278 1400
Engineers, stationary 5.20 350 1825
Carpenters 5.25 315 1660
Blacksmiths 5.30 330 1755
Engineers, inside * 5.40 308 1665
Masons 5.60 (Irregular)
Miners laborers 5.75 241 1380
Engineers & cranemen 5.80 384 2235
Machinists 6.10 305 1870
Blacksmiths 6.15 296 1825
Timbermen 6.20 273 1695
Machinists 6.40 [1056] (1265) 1690'
Clothing, week workers 6.89 209 1425
Hod carriers 7.00 [1155] (1385) 1850'
Blacksmiths 7.20 [1190] (1425) 1900
Day men 7.30 277 2015
Contract miners 7.75 255 1970
Engineers, portable & hoist 8.30 [1350] (1620) 2160'
Tonnage men 8.35 222 1830
Clothing, piece workers 8.90 209 1855
Carpenters 9.00 [1485] (1780) 2375'
Anthracite, contract men
Anthracite, day occupations
Bituminous coal
Railroads
Steel, 1922
Steel, 1920
Clothing
Union scales'

[1] In the absence of data on days worked in the organized trades, three figures are shown for annual earnings—the figure in brackets being annual earnings assuming 30 weeks' employment; the figure in parentheses, annual earnings assuming 36 weeks' employment; and the figure to the right, annual earnings assuming 48 weeks' employment. No allowance has been made for work at punitive overtime rates.

*Daily earnings should be $5.05, instead of $5.40; and annual earnings, $1,555.

Thus in Cleveland, which may be regarded as typical, they receive $7 for an eight-hour day. Of course building laborers and hod carriers probably do not have as regular employment as do anthracite laborers.

So much for the low-paid groups. It is clear that there is in anthracite mines no group which to a marked extent is a submerged group. The lowest average annual earnings for any of the occupations here picked out were about $1,300 a year, and the frequency curves on Chart 1 indicate that comparatively few of the individual adult workers make less than $1,200. But, on the other hand, anthracite rates—so far as day men are concerned—do not run very high. In contrast with outside wages, in railroad work, the steel industry and other lines, the anthracite day men are more nearly on a single plane. Barring timbermen, all the anthracite day occupations shown on this chart fall within the extreme limits of $4.25 and $5.30 per day. So, while anthracite day rates are clearly not at the bottom, they are equally clearly not at the top.

A blacksmith in a mine may be a highly skilled man (though many of them do very rough work), but a blacksmith's average pay, though among the highest of the day workers, was, prior to the advance, $5.30 a day. A blacksmith in Pittsburgh, which was picked out as a representative city for blacksmiths, makes $7.20 a day. We do not know how many days a Pittsburgh blacksmith works; but as these men are in manufacturing shops, their year was probably a fair one. If the Pittsburgh blacksmith worked 48 weeks (264 days), he would make $1,900, as against the blacksmith in the mines who worked 330 days to earn $1,755. Blacksmiths in railroad shops also earned more than blacksmiths in the mines, 85 cents more per day and $70 more per year—although they worked 34 days less.

A machinist in an anthracite mine averaged, under the old rates, $4.95 a day, or $1,720 a year, as against $6.10 a day and $1,870 a year for machinists in railroad shops, and $6.40 a day and $1,690 for a 48-week year in Boston manufacturing shops. The anthracite machinist had to work 348 eight-hour days, the railroad machinist 305, while the Boston manufacturing shop machinist was assumed to have had employment for only 264 days.

Almost the only important occupation about a mine which at all corresponds to the familiar building trades is that of carpenter. The mine carpenter makes about the same amount as men in the other higher grade day occupations: $5.25 a day, or $1,660 a year. Philadelphia carpenters, who may be taken as representative both of carpenters and of the whole array of familiar building trades, earn $9 a day. To earn as much per year as a mine carpenter earns by 315 days' work, a Philadelphia carpenter, assuming no work at overtime rates, would have to work only 184 days. Of course the rough work of the mine carpenter is not comparable to the finished work of a carpenter in the building trades. At the same time, the rough carpenters of the city receive as much per hour, though perhaps they have less steady employment, than the more highly skilled men. Bridge and building carpenters on railroads, however, earn only $4.65 a day.

Engineers in mines, whether inside or outside, make less per day and per year than do stationary engineers in railroad employ. The $5 earnings of the outside engineer and the $5.05 earnings of the inside engineer may also be compared with the $8.20 of portable and hoisting engineers in the Philadelphia building trades. Engineers and crane-

men in the steel industry earned more per day in 1920, and a great deal more per year, than engineers in mines. In 1922, they earned much less per day; though, owing to their long hours, they may have earned as much, or almost as much, per year.

Masons in anthracite mines earn $5.05 a day as against the $5.60 of masons in railroad employ; and, of course, much higher rates in the building trades.

Car runners in anthracite mines have averaged $4.70 a day as against $4.80 for motormen in Cleveland. The anthracite car runners averaged but 277 eight-hour days. Motormen, who in many cities work somewhat more than eight hours, and presumably have steady employment, would probably work considerably more days per year.

Week workers in the Chicago clothing market, with $6.80 a day, earned more than any anthracite day occupation; but with a year of only 209 days, their annual earnings were $60 under the annual earnings of anthracite day workers (for 103 days less work).

Our comparisons thus far have dealt only with anthracite day men. The rates for bituminous day men are practically the same for all occupations from laborer up, and run very close to $7.50 for an eight-hour day. This is substantially higher than the pay received by any class of anthracite day workers. The anthracite timberman, a highly skilled man, received under the old rate $6.20 a day, as against the lowest rate in the Hocking (bituminous) area of $7.25. The average annual earnings of day men in Pennsylvania bituminous mines (union) have been figured at $2,015, as against an average for anthracite day men of $1,485, although the bituminous workers average 277 working days per year as against 312 by the anthracite workers. For the relationship between bituminous day rates and annual earnings and those in occupations in industries other than mining, reference should be made to Chart 6 (supplemented by reference to Chart 4 for railroad train service men).

We come now to the highest paid anthracite worker, the contract miner—though we must not forget his laborer who is also a contract man. The anthracite contract miner made, before the 10 per cent increase, $7.75 a start. This was higher than the pay in all those occupations which appear above the long black bar on Chart 6. It is, however, 50 cents a day less than the average pay calculated for bituminous tonnage men in the union Northeast; $1.15 less than the average for piece workers in the clothing industry in Chicago (though the contract miner earned more per year); and $1.25 less per day than the pay of carpenters in Philadelphia, who may be taken as representing the general body of building trades' workers (though it should be noted that the miner received only 45 cents less per day than Philadelphia portable and hoisting engineers.) The annual earnings of contract miners before the 10 per cent increase were about equal to those of yard brakemen on railroads (see E on Chart 4); and since the 10 per cent increase are about equal to those of outside hostlers. They are still below the earnings of passenger and freight firemen, and of engineers and conductors of all classes.

Anthracite contract miners earn less per start but more per year than the average for bituminous tonnage men. But it must be remembered that the hazard, hard work, and piece work conditions of the contract miner are shared by the miner's laborer. In the bituminous figures, we have included among tonnage men all classes, not only machine cutters and pick miners, but also loaders; we have included the new men as well as the old

men. In anthracite, a man cannot be a contract miner until he has been in the mines two years. For a fair comparison between anthracite miners as a whole and bituminous miners as a whole (defining as miners the men who actually mine, as opposed to day men) we should, therefore, include both miners and laborers in anthracite, as well as the three classes of tonnage men in bituminous.

If this is done, the average earnings per start of anthracite contract men is found to be $7.05 a start and the average annual earnings $1,755. The 10 per cent increase would bring the earnings per start of anthracite contract men up to $7.75, or perhaps 50 cents less than the earnings of bituminous tonnage men in the union Northeast; and the earnings per year up to $1,930. This last is $100 per year higher than our estimate of the earnings of bituminous tonnage men in union Pennsylvania. It must be remembered, however, that the anthracite miners work 28 days more per year.

It is practically impossible to find an occupation outside of mining which is comparable to the work of the contract miner; and, indeed, none of the occupational comparisons which have been made should be pushed too far. For usually the work inside a mine is a good deal different from work bearing the same name outside. Compared with work in the building trades, the work of an anthracite miner probably requires a shorter apprenticeship and less varied skill. On the other hand, it is hazardous, heavy work, underground; and what the miner earns he earns by piece work. In most branches of mining work the skill required is of a simpler kind than that required in the majority of skilled trades. However, there are among miners many men who do highly skilled work who get but little more pay than the others; while in outside trades there are many men who do work of but little skill who make as much as their fellow workmen.

Though miners can learn the fundamentals of their jobs rather quickly they should not be thought of as unskilled men. There is an impression that the introduction of mining machines has reduced the miner to a shoveler of coal. This is quite erroneous. There is very little mining machinery in anthracite mines, and in the bituminous mines the machinery has simply done away with one type of manual work. The pick miner, in the old days, undercut his coal with a pick, drilled holes higher up, inserted explosives and fired the shot, then loaded the coal on cars. He had to look out for the safety of his roof, place timbers, and in general keep his working place in shape. All those things formerly done by the pick miner, with the exception of the undercutting of the coal, are still commonly done by the man known as a machine loader. The loader is still responsible for mining, works a whole day with perhaps only one visit from his mine foreman, and, in short, has about the same class of job that he has always had. And, of course, there are still many thousands of pick miners.

But the exact amount of skill required by workmen is no longer the vital factor in determining wage rates it formerly was. This is partly because the better planning of work and training of men, and the greater specialization, have, in almost all occupations, made it possible for men to learn the actual work to be done rather quickly. If the term unskilled has any real significance today, it has to do more with the degree of responsibility involved than with the time required to learn the work. The unskilled are ordinarily the helpers, the beginners, the men who have not yet found their permanent place—or perhaps large groups of men who work under direction at work that is regarded as inci-

dental, rather than as vital to the running of the industry. The unskilled *carry* for others.

It follows, therefore, that, even should mining require radically less experience than it does, it would still be a fundamental error to class as unskilled the entire body of men responsible for the conduct of the great coal industry. Coal mining is in every way a man's job. It is real work. It calls for more self-reliance than is commonly called for in factory operations where the foreman is always near. The industry cannot properly be manned by floating men who would spend a few months or years in it, and then go on to something else. A coal mine, moreover, is often the sole support of the community in which it is located, and the recompense must be such as to draw men with their families to such communities.

The coal miner has every right, therefore, to have his earnings compared, not with the lowest paid in every other industry, but with the rank and file of the workers in other great divisions of industry—railroads, steel, building, clothing, etc.[18]

Such comparisons show that the anthracite workers, including both contract and day men, averaged, prior to the 10 per cent increase, $1,605 per year. This was for 285 days' work. Bituminous coal workers in union Pennsylvania average: for tonnage men only—$1,830 for 222 days' work; and for day men only—$2,015 for 277 days' work. The 10 per cent increase for all anthracite workers will fall considerably short of removing the differential in favor of bituminous workers—this though the bituminous miners work fewer days, and are in a less hazardous and, according to general opinion, less difficult branch of the coal industry. We have been speaking of Pennsylvania bituminous, which comprises about 30 per cent of the bituminous coal industry of the country. In some other portions of the country where days worked are much shorter than in Pennsylvania, the annual earnings will be lower than the new figure for anthracite—though for a much shorter working year.

Strange to say, of the various industries compared with anthracite mining one of the closest as respects annual earnings is the clothing industry of Chicago (and probably also of other cities). The time workers in the Chicago tailor shops average $1,425, as against the anthracite day workers $1,485. But the piece workers in Chicago average $1,855, as against earnings of $1,755 by anthracite piece workers. The proportion of piece workers in the Chicago clothing industry is greater than in anthracite; so that the average for all the Chicago employees, including auxiliary workers, is $1,605, as opposed to the anthracite average, of $1,580. The 10 per cent increase should, however, raise anthracite average earnings about $80 above those for the clothing industry. The anthracite workers work 285 days, however,

[18] We have included in our comparisons the steel industry and the poorly organized groups of railroad workers; and would have included more non-union earnings had satisfactory data been available. We would like also to have compared the earnings of anthracite miners with the incomes of farmers, with those of clerical workers, etc.

While more comparisons of this sort, could they have been made, would have thrown important light on relative earnings in union and non-union industries, and those in mining, manufacturing and transportation as opposed to those in agriculture, clerical work, etc., the comparisons which have actually been made probably represent as wide a range of industry as a board charged with fixing the wages of anthracite miners would consider. A board fixing wages for the organized anthracite workers would likely be influenced more by rates established elsewhere under union conditions than by those which might be found to exist in non-union industries. It would probably give little consideration to incomes other than those of workers in mining, manufacturing, building and transportation.

Eventually, however, all these more remote comparisons should be worked out.

as against the clothing workers' 209.

The statistics for the steel industry are too scattered, and too little is known with regard to annual employment to justify making an average for earnings in the industry as a whole. The indications are that in 1920 they were much higher than in anthracite. At 1921 rates they certainly were much lower.

The average annual earnings of shopmen on railroads were $1,480. This was $125 lower than the average for all anthracite workers prior to the 10 per cent increase, being lower primarily because of groups A to E on Chart 5, made up of helpers, laborers, etc. The 10 per cent increase will increase by that much the difference between the average earnings of railroad shopmen and anthracite workers. The railroad train service employes represented on Chart 4 average $2,295 per year. This, of course, is much higher than the average for anthracite workers, either before or after the 10 per cent increase.

The 10 per cent anthracite increase will still leave the daily rates of anthracite day men well below the daily rates in the building trades. The daily earnings of contract miners will be slightly below those of carpenters and of earners in similar occupations in the building trades; but the annual earnings of anthracite miners should be higher, unless the men in the building trades are able to work as much as 240 days per year.

7. Conclusions

The aim of this paper has been to throw anthracite earnings into relief against earnings in the bituminous coal and other industries, with a special view of determining where the industry stood before and after the 10 per cent increase of September, 1923. No comparison of wages in the coal and other industries could in itself answer the question as to what should have been done in September. Even were our wage statistics absolutely complete, the mere knowledge of what wages are would not answer the question as to what they ought to be. In making any actual decision regarding wage rates in anthracite, all of the following would have to be taken into consideration:

1. What should be the national standard for wages, considering the productivity of industry, and the incomes now being received by various elements in the population?

2. What, in a general way, is practicable for anthracite wages, considering the financial standing, competitive position, and consuming market of the anthracite industry?

3. Do the extra hazard, underground working conditions, and heavy character of anthracite mining warrant a differential in wages over those in certain other industries, and if so, how much?

4. Does the fact that many of the anthracite employes are foreign and do not speak English warrant lower wages than are paid elsewhere?

5. What account should be taken of differences in skill?

6. In industries of such public importance that employes are practically forbidden to strike, should employes be paid higher wages, or lower wages, than in industries where these restrictions do not exist?

7. What account, if any, should have been taken of the strategic position of the union, of its power to prevent production?

8. How far would it be justifiable to go in making a settlement, not perfect in all ways, but which would come sufficiently close to what would be acceptable to the various parties at interest to keep the machinery of production in motion?

These questions we have not gone into: and this paper is, therefore, not an answer, and did not start out to be an answer, to the question as to what settlement would have been best. But it is hoped that, in clearing up certain questions of fact with regard to anthra-

cite wages and wages in other industries, each person who is interested will be helped in forming his own judgment regarding the anthracite wage question.

The wage situation may be summed up as follows:

The anthracite workers, prior to the 10 per cent increase, were not a sweated group. They have, for mining, exceptionally steady employment; and their job tenures have been unusually secure. Few individuals, other than boys, earn less than $1,200 a year, or $100 a month.

On the other hand, the 72 per cent of the employes who are day men or miners' laborers have not been a highly paid group. Few, even of the most skilled, made as much as $1,800—no day occupation as a whole averaging that much. The rates per day ranged from about $4.25 to about $5.30. These rates must be regarded as distinctly less than rates in occupations of a somewhat similar nature outside, provided we overlook certain very low-paid outside occupations. There is much evidence to show that a 10 per cent increase, could it have been applied to day men and miners' laborers only, would have put rates in the anthracite industry on a sounder relationship to rates in the bituminous industry and to outside wages generally.

It is more difficult to say whether an increase in the pay of the 28 per cent of contract miners was warranted. It brings the average earnings to $2,165. Surely the 20 per cent [19] who formerly received more than $2,400, and will now receive more than $2,640; and especially the 10 per cent [19] who formerly received more than $2,700, and will now receive $2,970 and up, may regard themselves as fortunate.

Probably no disinterested, informed person doubts but that the wage structure in the anthracite mines needs revision—apart from any general raising or lowering. The differences in pay among contract miners, and to a less extent among day men, are not in proportion to the difficulties involved or the service rendered. Any general increase in wages made without first inquiring whether some should be raised more and others less must be regarded as unfortunate. However, a scientific revision of the anthracite wage structure with these considerations in mind would have had to have been begun long before September 1.

Leaving out of account the question of internal adjustments within the industry—of the relatively high wages of some and low wages of others—the net effect of the 10 per cent increase, so far as the outside public is concerned, was to raise the average remuneration of the 160,000 anthracite employes from about $1,600 a year to about $1,760. Everyone must decide for himself as to which level, considering all the circumstances, is the more just.

[19] These are the proportions of full-year men, who constitute only two thirds of all contract miners. Probably some of the shifting employes, but not as large a proportion, earned these amounts.

APPENDIX

Note 1

The Coal Commission compiled no figures for the earnings of full-year employes. But the earnings of such may be computed from the Commission's published tables as follows:

In the study on Irregularity of Employment in the Coal Industry (Report Q), anthracite table 15-A-1, column 24, there are listed all the full-year contract miners employed by a selected list of railroad collieries. The column shows that, out of 4,886 full-year men, 19 worked between 180 and 190 days, 60 between 200 and 210 days, 380 between 230 and 240 days, 823 between 260 and 270 days, 701 between 280 and 290 days, 42 between 300 and 310 days, and so on for every 10-day interval below, above and between the groups mentioned. From this table it is a simple matter to find the per cent of all full-year men working each given number of days.

In the study on Earnings of Anthracite Miners, there is given for all contract miners in each producing region a frequency

distribution showing for all the men working for from 180 to 190 days for a single mine, the number who earned during this time between $1,000 and $1,100, the number who earned between $1,300 and $1,400, the number who earned between $1,600 and $1,700, the number who earned between $2,000 and $2,100, and so on for every $100 interval below, above and between those mentioned. From such a table it is a simple matter to find the per cent of all those men working a given number of days who earn each given number of dollars.

Without going into more detail than is necessary, it was by a combination of tables showing days worked by full-year men and tables showing earnings for each given number of days worked, that it was possible to work out the complete frequency distribution of the earnings of full-year men shown on Table 1, Chart 1. The earnings tables had, of course, first to be combined for the three anthracite districts; and the regularity of employment tables had to be combined for railroad and independent collieries, special care being taken with reference to weighting. Practically all of the anthracite collieries were tabulated for earnings. About 30 per cent were tabulated for regularity of employment; but the proportion was larger in the case of the independent and smaller in the case of the railroad collieries.

It seems probable that in the case of day men, the hours worked in those railroad collieries selected for the regularity of employment study were a little longer than was true of hours in all railroad collieries, and that the annual earnings of full-year day men may, therefore, be slightly exaggerated. So far as is known there was no such exaggeration in the case of full-year contract men. Aside from the question of the proper selection of collieries, the accuracy of Table 1, Chart 1, depends chiefly upon the extent to which, among any group of men working a given number of days, those who were full-year employees exhibited the same distribution of earnings as those who were not. Doubtless errors are introduced in this and other ways. But it is believed that the results are sufficiently close to the realities in the situation to serve for illustrative purposes.

Note 2

TABLE 7.—AVERAGE EARNINGS OF FULL-YEAR ANTHRACITE EMPLOYEES, 1921

INSIDE DAY MEN*				OUTSIDE DAY MEN†			
Occupation	Daily Earnings	Days Worked	Annual Earnings	Occupation	Daily Earnings	Days Worked	Annual Earnings
Drivers	$4.55	294	$1,330	Laborers	$4.25	324	$1,375
Car runners	4.75	292	1,385	Teamsters	4.40	341	1,495
Laborers	4.90	293	1,430	Stablemen	4.30	390	1,685
Masons	5.00	293	1,475	Firemen	4.75	358	1,705
Tracklayers	5.20	308	1,605	Carpenters	5.25	328	1,730
Engineers	5.05	324	1,645	Machinists	4.95	362	1,790
Timbermen	6.25	287	1,790	Engineers	5.00	366	1,825
Stablemen	4.75	379	1,800	Blacksmiths	5.35	344	1,840
Pumpmen	5.10	363	1,850				
All inside day men‡	*4.95*	*310*	*1,535*	*All outside day men‡*	*4.40*	*335*	*1,475*
CONTRACT MEN							
Miners' laborers	5.90	246	1,450				
Contract miners	8.00	257	2,065				

PER CENT OF POSITIONS FILLED BY FULL-YEAR MEN

Inside day men	64	Miners' laborers	33§
Outside day men	74	Contract miners	67

* In the specific inside day occupations men working 240 days or more were taken. This division point was chosen because it was found that inside day men working over 240 days, as a class average the same number of man-starts per year as do full-year employees.

† In the case of outside day men, the division point was 250 days.

It was found that, taking inside and outside day men as a whole, average earnings obtained by the 240 and 250 day methods came within $5 of equalling annual earnings obtained by the method explained in the first appendix.

‡ Including occupations not given separately. By an oversight in tabulation, the full year outside men include slate pickers, and their average daily earnings should, therefore, not be compared with the average for outside men on Table 2. Had slate pickers been included in Table 2, the average daily earnings for all outside day men would have been $4.35.

§ Figure raised from 30 to 33 per cent to offset seeming turnover due to great increase in number of miners' laborers during 1921.

Note 3

TABLE 8.—BITUMINOUS FULL-YEAR EMPLOYES (NORTHEAST UNION ONLY), 1921

Per Cent of Employes in Each Group Earning Less Than Each Specified Amount Per Year

DOLLARS PER YEAR	TONNAGE MEN	DAY MEN	DOLLARS PER YEAR	TONNAGE MEN	DAY MEN
500	.0	.1	2,300	71.1	84.4
600	.0	.2	2,400	76.8	89.6
700	.3	.2	2,500	81.8	92.7
800	.3	.3	2,600	86.6	95.3
900	.9	.8	2,700	89.7	97.2
1,000	1.6	1.7	2,800	92.6	98.0
1,100	3.2	2.1	2,900	94.2	98.6
1,200	5.4	2.7	3,000	94.9	99.1
1,300	7.5	4.0	3,100	95.8	99.6
1,400	10.4	6.9	3,200	96.4	99.8
1,500	14.8	10.9	3,300	96.9	99.9
1,600	19.9	18.2	3,400	97.5	100.0
1,700	25.6	28.8	3,500	98.0	100.0
1,800	32.8	39.4	3,600	98.4	100.0
1,900	39.8	49.4	3,700	98.8	100.0
2,000	47.9	60.0	3,800	99.3	100.0
2,100	56.3	70.9	3,900	99.4	100.0
2,200	63.4	77.3	4,000	99.4	100.0

Note 4

TABLE 9.—AVERAGE EARNINGS OF FULL-YEAR TONNAGE AND DAY MEN IN EACH OF THE SIX GROUPS INTO WHICH THE FULL-YEAR EMPLOYES OF THE 285 MINES TABULATED BY THE COAL COMMISSION FOR 1920 WERE DIVIDED

	UNION			NON-UNION		
	Daily Earnings	Days* Worked	Annual Earnings	Daily Earnings	Days* Worked	Annual Earnings
Tonnage men:						
Northeast	$9.10	226	$2,055	$9.50	235	$2,225
Southeast	9.10	210	1,905	9.60	185	1,780
West	10.40	225	2,340	9.60	249	2,390
Day men:						
Northeast	7.20	266	1,920	7.00	283	1,980
Southeast	6.90	252	1,735	6.50	253	1,635
West	6.85	285	1,945	7.00	286	2,000

*Apparently the days worked by men as published for these mines are the days worked by all men—assuming that no time was lost between positions—and not the days worked by the full-year men whose earnings only are shown in the table. In some cases the days worked by the two groups were probably nearly the same. But there seems to have been enough differentiation between sections in the relationship between starts by full-year men and by all men, or perhaps enough inaccuracy in the method of computing average days worked, to throw average earnings per start in the different sections out of their true relationship one to another. Thus it is probably not true that full-year day men in the union West earned less per day than full-year day men in the union Southeast; but rather earnings per day in the union Southeast were probably less, and those in the union West greater, than the figures shown.

Coal Prices: A Selected Bibliography

By Thomas Parker Ayer
Librarian, Federal Trade Commission

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A complete list of cases and decisions may be found by consulting the following topical indexes, and the other indexes published in connection with the various files of federal and state reports and reporter systems.

American and English Encyclopædia of Law.

American digest.

Cyclopedia of law and procedure.

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Transcripts of the proceedings and evidence in these cases as well as briefs of opposing counsel are on file in the offices of the clerks of the several courts in which these decisions were rendered, and are available by visit to the various custodians thereof.

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68 New York 558. 1877.

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(For a more complete list consult *Commercial Organizations of the U. S.*, issued by the Bureau of Foreign and Domestic Commerce. Misc. series No. 99, edition of March 1, 1923, p. 42.)

Several of these associations issue house organs, reports, etc., usually confining the distribution to their own memberships.

American Wholesale Coal Association, 710 Union Fuel Bldg., Chicago, Ill.

Anthracite Coal Operators' Association, 519 North American Bldg., Philadelphia, Pa.

Coal Mining Institute of America, 909 Chamber of Commerce Bldg., Pittsburgh, Pa.

Illinois and Wisconsin Retail Coal Dealers' Association, 20 W. Jackson Blvd., Chicago, Ill.

Illinois Coal Operators' Association, Fisher Bldg., Chicago, Ill.

Michigan-Ohio-Indiana Coal Association, Brunson Bldg., Columbus, Ohio.

Mid-West Retail Coal Association, 514 Pierce Bldg., St. Louis, Mo.

National Coal Association, 200 Commercial Bank Bldg., Washington, D. C.

National Retail Coal Merchants' Association, 1414 S. Penn Square, Philadelphia, Pa.

New England Coal Dealers' Association, 141 Milk St., Boston, Mass.

Southern Appalachian Coal Operators' Association, Holston Bank Bldg., Knoxville, Tenn.

Southwestern Interstate Coal Operators' Association, 519 Keith and Perry Bldg., Kansas City, Mo.

COMPANY REPORTS

Coal companies issue printed annual reports to stockholders, and other documents, some of which are available to the public. To discover the names of these companies consult:

Coal Catalog Combined with Coal Field Directory, published annually by Keystone Consolidated Publishing Co., Pittsburgh, Pa.

Mac's Directory of Coal Sales Companies, published annually by the Coal Information Bureau, Pittsburgh, Pa.

The following are among the important anthracite railroad companies:

Delaware & Hudson Company.

Delaware, Lackawanna & Western R. R.

Erie R. R. Company.

Lehigh Valley R. R. Company.

New York, Ontario & Western Ry. Company.

Pennsylvania R. R. Company.

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Financial Aspects of Unemployment in England

By Charles E. Lyon
Trade Commissioner, London

I

THE old familiar slogan "Trade has the Right of Way" has once more been reaffirmed as the keynote of British policy in a time of storm and stress. A definite settlement of the Ruhr is a preliminary to better trade and a decline in unemployment is, in the opinion of the Prime Minister, the almost immediate result. Until the stage has been set for an acceleration of trade, the Government will continue to spend emergency funds in various ways to relieve unemployment.

The gross sums so expended in recent years have been as follows:

(*In Thousand £*)

	1920–21 Audited	*1921–22 Audited*	*1922–23 Not yet Audited*	*1923–24 Budget Estimates*
Ministry of Labor and Unemployment Grants	19,336	20,043	23,388	20,850
Training Ex-Service Men	14,309	11,524	8,643	5,017

These sums do not represent the total expenditure on miscellaneous forms of aid.

The Prime Minister's statement was made at the end of July at the earnest request of various groups seriously concerned in unemployment conditions. When pressed for more specific details, the following projects were confirmed by the Ministry of Labor and by the President of the Board of Trade.

The Minister of Labor enumerated the character of Government works now in operation or contemplated:

1. The full amount under the Export Credits scheme had been borrowed, but only £14,000,000, or 54 per cent, is actually in use. Provision has been made to continue the scheme.

2. The former guarantee of £25,000,000 under the Trade Facilities Act has been extended to twice that sum and is functioning effectively.

3. The Ministry of Transport has provided for over £11,000,000 of work, divided between the Government and local authorities. Before next April £7,500,000 would be spent, employing 27,000 men. The whole plan will extend over seven years. An additional sum has been set aside for agricultural work and afforestation.

4. Two schemes of the Post Office call for an expenditure of a half million; several hundred miles of underground wires will be laid beginning March, 1924; the Admiralty will spend a similar amount in 1924–25; the War Office, Air Ministry and Colonial Office are at present engaged upon schemes.

5. The Unemployment Grants Committee has authorized a half-million expenditure toward which it grants up to 60 per cent of the wages paid; further, the Government will bear 50 per cent of interest charges for 10 years on necessary loans. This service will help public utility concerns and will also employ 200,000 men this winter, and at least another 100,000 later on, in carrying out proposals to cost several million pounds.

6. Work at the London and Surrey docks is ready to begin at once at a cost of £4.5 million.

7. The King's Roll National Council has found occupation for 25,000 out of 65,000 disabled ex-service men.

8. The Imperial Economic Conference will meet in October to discuss financial

coöperation, and any other form of assistance to the Dominions and Crown Colonies.

The President of the Board of Trade stated that £28,000,000 worth of work had been and was being done, and that 100,000 men had been put in employment.

These recent official announcements aroused an earnest protest by the Industrial Group and by the Labor Party in Parliament. The discussion was then taken up by the press and by economists, and by the Federation of British Industries, so that the old problem of unemployment aid is once more a live issue.

In reply to Mr. Baldwin's assertion that

> the real and lasting cure lies in the restoration of stable conditions throughout the world,

the Industrial Group replies that

> seldom, if ever, has an industrial recovery taken place at the back end of the year. If some definite feeling of security is not created at the latest by the end of September, no recovery will be possible before March. If a fourth winter of unemployment takes place, the State will then carry anything up to 500,000 industrial pensioners.

Specific criticism of Government relief works points out that these employ unskilled labor, excluding practically all the tradesmen. Artisans who undertake such hard manual labor soon learn their unfitness and become more than ever depressed. Again, various grades of workmen should be employed in their own localities. The Export Credits scheme has not been effective and has resulted in the loss of one credit of £10,000,000 because of its inelastic quality. Altogether "what is lacking is foresight and imagination."

Program of the Industrial Group

A much more elaborate program is submitted by the Industrial Group as follows:

1. Far more extensive electrification of railways, including the London and South Western, the main lines to Brighton, York and Newcastle, as well as extensive electrification on the Great Eastern and the Midland Railways. This would call for an expenditure of nearly £50,000,000, but the Industrial Group would go even further and electrify suburban lines at Glasgow and Manchester and mineral lines in South Wales.
2. The tube railways of London need extension.
3. The Railways Bill calling for elaborate repairs and maintenance should be passed.
4. The Lower Thames tunnel, the Grimsby floating dock and the London dock extension should be undertaken.
5. The 1921 recommendations for development of inland waterways should be taken up.
6. A bridge across a river in Nigeria, at a cost of £1,000,000.
7. The bridge across Sydney Harbor, the longest in the world, at a cost of £7,000,000 might be given to British contractors if the Government would assist in the financing.
8. Export credits assistance might secure Russian orders of nearly £3,000,000.

The Industrial Group makes no estimate of the probable cost of these projects nor of their effect upon the tax rate.

Dissatisfaction of the Labor Party

The Labor Party was more emphatic in its comment upon official proposals. Its Emergency Committee

> expressed its profound dissatisfaction with the proposals for dealing with the present grave situation. They represent scarcely any advance on those which proved to be miserably inadequate during the past three winters. Clearly the need is for more drastic measures.

These measures, as outlined by the Labor Party, are:

1. At least £60,000,000 expenditure upon electrification and reconditioning of railways.
2. The creation of great generating sta-

tions to reorganize the supply of electric power.

8. Full revision of arrears in school building and educational equipment.

4. More speedy afforestation, land drainage and reclamation.

5. Reorganization of canals and waterways.

6. Adaptation of roads, bridges and harbors to the needs of modern traffic.

7. Many other schemes previously suggested. "A capital outlay of several hundred million pounds on the development of all means of transport, spread over the next few years, would be remunerative to the nation."

Another one of the miscellaneous proposals under this head is represented in the appeal of Mr. Sidney Webb, a Labor member, for training centers to provide instruction for 211,000 adult women and upwards of 30,000 young girls available for industry.

After enumerating this elaborate and rather Utopian scheme, the statement concludes: "It may be asked, where is the money to come from? The Labor Party urges the Government to arrange immediately for raising a series of loans." No tentative estimate is made of the probable total and no comment is made upon the necessary addition of some £20,000,000, over a few years, to the interest charges on the National debt.

Trades Union Congress in September[1]

The attitude of Union Labor will be made clear at the Trades Union Congress of September 3. One of the proposals on the program is that of the National Union of Railwaymen for a six-hour day, a measure which is not in harmony with the principle behind the Government policy. During the month of July, when employment was falling off in response to the uncertainties attaching to the Ruhr occupation, there were 74 disputes in progress, involving 95,000 work people and resulting in a loss of 1,665,000 work days. These were distributed mainly among the same industries that will derive the greater part of the benefit from provisions for unemployment relief through the efforts of the Government and of local authorities. This situation represents a drag upon the proper functioning of relief plans that must interfere materially with their effectiveness.

The press calls attention to the fact that strikers are encouraged through the liberal policies of certain local boards of guardians. Thus in Poplar and Bermondsey strikers are classed with ordinary unemployed with the result in some instances that they are maintained on a level far above the wages of ordinary labor in many districts. Thus in Poplar a man with a wife and five children may receive £2. 6s. 6d a week, in addition to rent and an allowance of 1s. 6d. for coal. In Bermondsey the total runs as high as £2. 12s. 6d. This outlay falls ultimately upon the ratepayers. The cost in Poplar for this extra relief is about £6,000 per week.

Stability and Deflation

To this point attention has been paid solely, in the present report, to the reactions of various groups to the latter part of the Prime Minister's statement defining his attitude:

> The real and lasting cure for unemployment lies in the restoration of stable conditions throughout the world. . . . At the same time every effort is being made to carry out the most effective schemes for dealing with unemployment.

It has been shown that there is much difference of opinion as to what the schemes should be.

The Federation of British Industries, accepting without dispute the need for emergency provisions against unem-

[1] This article was written before the results of this Congress was known. EDITOR.

ployment, is far more concerned in the first part of the Minister's statement, and has asked for an official definition of "stability," the point at which emergency methods may be superseded by normal procedure. Is "stable conditions," used in a general sense, to mean a period no longer disturbed by controversy over the Ruhr, reparations, and Allied debts, or is it used in a technical sense as the contrary of the term "deflation?"

In other words, the Federation wishes to know whether Mr. Baldwin adheres to the recommendations of the Cuncliffe Committee leading to a gradual deflation of prices, or whether prices may soon be made so stable that manufacturers and merchants may proceed with some confidence in making future commitments. Before normal production, calling for fuller employment, can begin, there must be a feeling of confidence among bankers and manufacturers that the proper stage of the business cycle has been reached.

Emergency employment is all well enough, but trade recovery is based upon long-run provisions that should contain as few intangible factors as possible.

The query of the Federation has brought into the controversy a number of analysts and economists who advocate either stabilization or further deflation. Until some definite conclusions have been reached it may be assumed that hand to mouth business will continue and emergency employment thus be prolonged.

Summary of Unemployment Status

The whole situation as revealed above may be viewed from two angles. (1) The controversy as to emergency employment turns upon the extent of relief works rather than upon their acceptance or rejection on principle. It is safe to assume, therefore, that some compromise between the minimum and maximum proposals will be made effective. (2) The silence of the Prime Minister under the questioning of the Federation leads one to suppose either that he regards the discussion of "stability" as an academic one, or else that definite progress is being made toward a European settlement that will be announced when he considers it expedient.

II. RELATED TOPICS

Lag between Trade and Employment

In connection with the suggestion that a settlement of Continental problems would start the wheels of industry turning, with a consequent immediate pick-up in employment figures, it is interesting to compare British totals of imports and exports, during eighteen months, with the changes in employment.

Month	*British Total Foreign Trade*	*Per Cent of Insured Unemployment*
1922	Million £	Per Cent
January.....	148	16
February....	137.6	15.5
March.....	162.5	14.4
April.....	144.8	14.4
May.....	155.7	13.5
June.....	145	12.7
July.....	150.4	12.3
August.....	150.5	12
September..	145.8	12
October.....	153.6	12
November...	171	12.4
December...	162	12.2

Month	*British Total Foreign Trade*	*Per Cent of Insured Unemployment*
1923	Million £	Per Cent
January.....	176.4	12.7
February....	151	11.8
March.....	160	11.1
April.....	161	10.9
May.....	174	10.7
June.....	163	11
July.....	145	11.2

Since there are 11,750,000 workers enrolled under the Unemployment Insurance Act, a change of one-tenth per cent in the second column represents an increase or decrease of 11,750 among the employed.

The chart indicates that there is no close correlation between total foreign trade and employment, or at any rate that the two curves do not move in a parallel way. Thus the heavy increase in foreign trade during November and December, 1922, and January, 1923, is accompanied by an increase in unemployment during the same months. Part of this was of course an anticipation of the lower trade totals in February, but whether the lag in trade returns should reach back for three months is uncertain. At any rate the table indicates that no definite assurance can be given that improved business, following an adjustment of political and financial adjustment with the continent of Europe, will be promptly matched by decidedly less unemployment. There would be some improvement but whether it would be sufficient to remove the rigor of a "fourth winter of unemployment" is open to grave doubt. Unfortunately for the administration, the case presented by the Industrial Group has centered itself around the particular point of a "fourth winter," whereas the Government proposals go to the essence of the problem, which concerns the minimizing of industrial and employment problems over a long period of readjustment. Obviously no readjustment can be expressed in terms of weeks or even of a quarter-year.

The Vogue of the Business Cycle

An official announcement that some agreement had been reached with respect to the Ruhr, so that the track was now cleared for trade and finance to proceed on a basis of confidence, would undoubtedly start salesmen along the familiar paths of trade. These men would be zealous in the pursuit of orders and quite possibly they would find wholesalers and retailers prepared to stock heavily in anticipation of a trade revival.

The rub would come when these accumulated orders were considered at meetings of company directors with production managers and banking connections. There would be an immediate desire to learn whether the large orders represented an upward turn in the business cycle—an organic development—or whether a brake should be applied in order to prevent overbuying, new inflation, and a repetition of the harrowing experience of 1920. The great feeling of relief that would follow the announcement of a settlement of reparation problems would be apt to inspire over-confidence and false optimism on the part of buyers.

British business interests have of late been much more attentive to long-run analyses of conditions. Index numbers and interpretations of the business cycle are by no means new, but their value was not as apparent in normal times as in the recent years of upset conditions. Unquestionably these analyses tend to become academic and the study of index numbers tends to become a cult. At the same time, many of the bank and business reviews present the basic factors about business so clearly and in such popular terms that the manufacturers are attentive to them even if they do not understand the more complex reasoning of the index faddist. One evidence of this desire of the business man's intent to follow economic law is seen in the protest of one opponent of the Government that much of the present

trouble arises out of "index methods of unemployment relief."

The merchant guides his policy in the light of the probable demand three months hence. He might be quite disinclined to expand his production to anything like capacity in response to a boom following reparation adjustments. If hand to mouth manufacture continues, then of course he would not contribute in any large measure to a decline in unemployment.

In this attitude he would receive the support, or even follow the advice, of his commercial banking connection. Through recent extension of branches the banks have acquired a most intimate knowledge of the commercial conditions in different areas, and an ability to place their loanable funds wherever trade prospects seem to be brightest. This makes the branch less dependent upon its immediate community so that there is less chance of venturesome loans. Any revival of orders following an official statement that conditions on the Continent were stable would first have to stand the test of time before loans were made. This would delay any prompt decline in unemployment figures.

Some Forms of Government Aid to Unemployed

The following summaries of recent reports indicate the nature and extent of the relief furnished through various Government agencies.

The Unemployment Grants Committee was appointed in December, 1920, to grant sums to local authorities under two headings.

(1) An advance of 60 per cent of the wages involved may be made when the contracts for the supply of materials are placed in Great Britain. The Second Interim Report of the Committee, dated July 23, 1923, shows how the work was distributed:

	Amount of Grants
Roads	£1,081,314
Grounds, Cemeteries	827,356
Gas, Water, Sewage Disposal	533,100
Tramways	246,138
Painting	217,362
Docks, Harbors, Quays	201,560
Land Reclamation	81,475
Electricity	49,751
Public Institutions	43,113
Miscellaneous	40,230
	£3,321,399

This sum enabled 2,592 schemes to be begun, involving a total value of £12,000,000.

(2) Another sort of advance cares for 50 per cent of sinking fund and interest payments for 15 years when loans are issued to put schemes in operation.

These works are separated according to whether they are productive of revenue or not.

Non-revenue Producing

Roads and Footpaths	£10,272,792
Sewage Disposal	7,373,659
Parks, Recreation Grounds	1,459,932
Docks and Embankments	829,202
Water Undertakings	930,337
Public Institutions	753,624
Miscellaneous	291,126
	£21,910,672

Revenue Producing

Electricity	£2,329,471
Gas and Water	2,166,745
Tramways	1,309,546
Cemeteries	155,538
Sport Grounds	199,445
Sanitation	175,535
Miscellaneous	590,744
	£6,927,024

The total, £28,837,696, was divided among 3,601 schemes.

The work of the Unemployment Grants Committee in two and a half years resulted in a total of 1,500,000

man-months. The exact number of men given employment is not known but the above figure might be expressed differently as providing half-time employment for 100,000 men since the Committee began its work.

The King's Roll

This is a list of employers who undertake to give training and other special consideration to three types of disabled ex-service men:

(1) Those who may expect to take up full-time work.

(2) Those whose disability will confine them to light jobs.

(3) Those who cannot undertake any ordinary "industrial" work.

A recent report of the King's Roll National Council gives the results since February, 1923, when activities started. There are 27,865 employers listed and nearly 300,000 disabled ex-service men have received attention. Industrial training has been given to 74,545 men in four years existence of the training scheme.

Municipal Schemes

The Unemployment Grants Committee states in the report of July 23, 1923, above referred to, that the proportion of revenue-producing (public utility) works proposed by local authorities (municipalities) in the winter of 1922–23 was very much less than in the preceding winter. For this reason it is proposed to broaden the terms on which Government coöperation will be offered.

This statement indicates that Great Britain does not confront the same problem presented in some other countries whereby tax exemption encourages municipalities to put out a great variety of loans in an inviting market. Local authorities in Great Britain enter a competitive market in making their loans. The deferring of interest represented by Government aid carries only for 15 years, does not result in issues at a low rate of interest at par (much less at a premium), and carries with it generally the proviso that contracts for materials must go to British firms. While it is regarded as patriotic to accept such a provision, at the same time there have been numerous instances recently in which foreign bidders have won contracts. The net result of these circumstances is a spirit of hesitancy among municipalities to embark on improving schemes, even though tempted to do so by the laudable purpose of reducing unemployment.

A leading London paper secured from its provincial correspondents an estimate of the amount of emergency relief work contemplated for the coming winter. A summary of these reports indicates that a large share of the work is on roads and docks employing a restricted type of labor that is not high-skilled. Mayors of metropolitan boroughs feel that the Government is laying too much stress on road work.

Direct and Indirect Employment

This brings up the question whether a contract for extensive work in a primary industry is the occasion for fuller employment and speeding-up in secondary or collateral lines that feed to the greater industries.

In official definitions of the Government policy and in comments by leading authorities the point is nearly always made that the value of relief work cannot be measured by the main project in hand, but extends much further into subsidiary industries manufacturing supplies and accessories. In addition, the laborer's wages are put into circulation again and again with a cumulative effect upon the general welfare.

By referring back to the various

projects proposed in different quarters, it will be seen that they have to do mainly with docks, railway electrification and road building. The Labor Party proposals would widen the activities somewhat, but a very great part of the plans will not stimulate production heavily in collateral industries, passing the benefit along. The effect has been to reduce unemployment where it affects great numbers rather than to give the same proportionate relief throughout the country.

Numbers Unemployed in Separate Trades

In the following table the Ministry of Labor arrangement is revised with the trades listed according to numbers unemployed. The reader should endeavor to discern the degree to which relief along one line will help workers in one or more of the other numerous lines.

British Industries listed in the order of total unemployment under the Insurance Act. Percentage of total in each industry. (Revision of Tables in Ministry of *Labor Gazette*, June, 1923.)

Industry	*Number Unemployed*	*Per Cent*
Engineering and Iron-founding	191,299	16.6
Textile Trades		
Cotton	134,824	22.4
Woolen and Worsted	10,927	4.1
Flax, Linen and Hemp	13,137	14.5
Jute	4,491	10.7
Silk	1,478	4.4
Rope, Card, Twine, Net	2,508	11.3
Hosiery	3,727	4.4
Lace	3,431	12.3
Carpets and Rugs	782	3.3
Bleaching and Dyeing	10,375	9.9
Other	3,641	8.2
Transport Service		
Railways	14,473	5.7
Tramway and Omnibus	3,562	3.4
Other Road Transport	25,585	15.7
Seamen	20,708	18.4
Canal, River, Harbor	44,097	22.9
Warehousemen, Packers, Porters	6,808	17.8
Shipbuilding	115,080	32.1
Building and Construction		
Building	88,760	11.5
Other Construction	19,632	17.5
Metal Trades		
Iron, Steel, Tinplate, Sheets	45,893	14.9
Brass, Copper, Zinc	8,826	13.6
Electrical and Surgical Instruments	8,725	8.3
Hand Tools, Cutlery	4,147	14.3
Needles, Pins, Dies, etc.	1,356	8
Wire	2,411	8.6
Bolts, Nuts, Screws, etc.	6,536	18.5
Hardware and Hollowware	12,293	11.3
Watches, Jewelry, etc.	5,837	11.4
Other	4,686	8.9
Distributive Trades	63,724	6.3
Mining Industry		
Coal	35,323	2.9
Iron	3,621	15.8
Clay, Sand, etc.	3,155	5.2
Other	1,806	18
Food, Drink and Tobacco		
Food and Drink	40,817	9.2
Tobacco	3,761	8
Clothing Trades		
Tailoring	8,916	4.5
Dressmaking, etc.	10,513	4.4
Hats, Caps, Bonnets	1,910	5.6
Corsets	1,060	7.4
Boots and Shoes	11,951	7.9
Other	3,644	8.7
Hotels and Clubs	23,589	8.5
Explosives and Chemicals	22,547	9.4
Printing and Paper		
Paper	4,115	6.7
Stationery	4,267	6.1
Publishing	12,876	6
Sawmills, Furniture	20,500	9.2
Vehicles	18,702	8.6
Public Utilities	16,014	7
Commercial, Insurance and Banking	10,308	5.1
Glass	7,931	17.4
Pottery, Earthenware	7,263	10.1
Bricks, Tiles, etc.	7,221	9.3
Rubber	6,965	10.7
Leather	6,870	9.9

Effect of Relief Measures

Through the above re-arrangement of unemployment figures in order of numbers of workers affected, it becomes apparent that the emergency relief measures are aimed primarily to help the first half-dozen industries on the list rather than to allocate a percentage of the funds according to percentage unemployed. While it is conceivable that some of the direct relief, say, to the engineering trades filters down through the list until every trade receives a certain degree of indirect relief, the real distress in the smaller trades is not materially lessened.

The totals of the above table show 1,261,688 workers entitled to Unemployment Insurance, an average percentage, for all trades, of 10.7 per cent. In addition there were in the same month (May 1923) 53,668 workers on short time who were also entitled to the benefit.

The numbers seem exceedingly large, but a moment's reflection will show that the table has little absolute value, and is useful mainly as a basis of month to month comparison. The following corrections must be applied:

(1) The term "unemployment" does not mean absolutely out of work. The *Labor Gazette* states at the head of the table:

> An applicant for unemployment benefit must prove, among other things, continuous unemployment, and it is provided that for this purpose any 3 days of unemployment within a period of six consecutive days shall be treated as a continuous period, and every two such periods, separated by a period of less than three weeks, shall be treated as a continuous period.

That is, those employed part of the time may qualify for the benefit. The definition has been changed from time to time. When the Geddes Axe Report was made (1921) the terms were much more lenient, so that an apparent decrease in numbers of workless may be in part explained by a new basis of computation.

(2) No account is taken of seasonal conditions whereby many in the above table will automatically be restored to work when the season in their respective trades returns.

(3) It is not apparent what degree of activity in industries was taken as the basis of full employment. Normal activity is by no means the same as capacity production. The abnormal employment conditions of 1919–20 should not be a criterion today. The most representative base would be an average over five pre-war years.

(4) It is not clear whether the same provisions apply uniformly throughout the country with respect to eligibility of strikers for one form or another of benefit from funds of the Government or of local authorities.

CONCLUSION

The actual degree of want, the time when genuine trade flow will be resumed, and the effectiveness of relief measures, cannot be accurately determined in such a complex organization as the whole industrial scheme in Great Britain. Consequently, there was no preventative to apply against the present situation. The most that could be hoped for was a temporary cure and this is being sought by all agencies with the utmost energy. Government authorities believe that the solution lies in placing trade considerations at the forefront in an expeditious settlement of reparation problems.

The Unemployment Agreement in the Chicago Men's Clothing Industry

By Willard E. Hotchkiss
Chicago Director, Industrial Federation of Clothing Manufacturers

IN a recent article, after suggesting some of the earmarks of progressive industrial relations management in ununionized industry, the author used the following language concerning operations under union agreements:

Industrial relations under agreement with a national union proceed from a viewpoint which is quite different from that just set forth. Unions which are strong enough to bring about definite agreements with management are usually aggressive and they naturally take the initiative in forcing their views upon management. There is, therefore, little occasion for an industrial relations manager under a union agreement to anticipate the requirements of employes. He must rather occupy himself with restraining the zeal of union representatives and keeping demands within limits.

This does not mean, however, that the opportunity for constructive work is less than it is under a plan of employe representation. Safeguarding the legitimate rights of management under a union agreement is a task which in the long run serves both the business and its employes. Helping management to adapt itself to the conditions of an agreement frequently results in greatly increased efficiency. Guiding management in the fulfilling of its responsibilities and in securing its rights under an agreement is a task which calls for constant study and mature judgment. Making action await proper investigation and thus developing in both management and the union respect for calm, orderly procedure is perhaps one of the most important tasks that industrial relations management can perform. Working out such an approach to problems that agreement, where agreement is possible, can be reached without unnecessary commotion and friction is another important task for wise industrial relations management.

Correctness in procedure and detail under a union agreement is fully as important as it is in the case of employe representation. In the Chicago clothing market, where labor management has had notable development, there has gradually been worked out in connection with adjustment machinery a technic which, during the four years in which the machinery has been operating, has considerably reduced the field of conflict and accelerated the process of adjustment. Skill in handling issues has made it possible to adjust practice to the requirements of management better than was anticipated at the time the industry became unionized.

Historical Background

Negotiation of the unemployment agreement in the Chicago men's clothing industry and the manner in which joint machinery for its administration has been inaugurated, is a striking example of union initiative directed towards a constructive end, meeting with a constructive response from employers. When the question of an unemployment fund was raised by the union in proceedings in July, 1920, before Chairman Tufts of the Chicago Board of Arbitration, the employers declined to enter into the merits of the question on the ground that the subject did not come within the scope of the agreement then in force between the manufacturers and union. The Board sustained their contention. In connection with the new three-year agreement concerning wages and working conditions that became effective May 1, 1922, the union secured the privilege of bringing up the question of an unemployment fund along with

wages three months prior to any anniversary date. In view of this fact certain employers devoted considerable study to the subject during the following months. Early in the year 1923 it became clear that the question of an unemployment fund was to become a major market issue. In the preliminary conversations on the subject it was agreed that in any negotiations the following principles should be accepted:

(1) Individual house funds.

(2) Administration of each fund by a joint board of trustees upon which a neutral member or members should hold the balance of power.

(3) Equal contributions by employer and employes.

(4) Negotiations to be conducted between the union and the market as a whole.

While it had been understood from the start that the unemployment question was to be negotiated and not arbitrated, it inevitably became somewhat involved with the question of a wage adjustment that was pending at the same time. However, confusion of the two issues was avoided by agreeing to submit the wage question to a special board of arbitration and to advise the board before it should make its award of any unemployment agreement reached and of the amounts, if any, that employers and employes would be called upon to contribute to any unemployment fund.

PRELIMINARY AGREEMENT

Late in April, 1923, representatives of the Federation and of the union reached agreement on the main principles concerning an unemployment fund. The special board of arbitration was accordingly advised that under the agreement reached employes would be asked to contribute one and one-half per cent of their weekly wages and that each employer would match the amount contributed by his employes. The special board of arbitration took account of this fact in making its award and contributions as agreed were set aside under the supervision of the permanent Board of Arbitration beginning May 1, 1923.

The preliminary agreement set forth the principles and the most essential details to be followed in the collection, the legal control, the administration, and the distribution of funds. It provided also that the trustees of any funds created should have the legal power and the duty to close out the funds by using them to pay benefits in the case of failure to renew any unemployment agreement entered into, or in case either party should go out of business.

The union engaged to secure full legal authority to represent employes in negotiating an unemployment agreement, also authority for the deduction of employes' contributions from wages. It was agreed that suitable limit should be fixed upon the size to which the fund could accumulate, that the employer should be protected against double liability for contributions in the case of enactment of laws compelling him to contribute to state funds, and finally that all funds not needed for current purposes should be invested in United States securities.

The time limits within which benefits should begin to accrue, maximum benefits to be paid in any week and within the insurance year, and the main items fixing eligibility for benefits, were all set forth in the preliminary agreement, and principles were established for the later working out of administrative details.

The preliminary agreement was formally accepted by the union and by the several associations of employers. Both employers and employes began to

make their contributions to unemployment funds on May 1, 1923. Each employe put himself legally within the scope of the agreement, and authorized negotiation of a final agreement by signing such authorization at the time of making his first contribution. This authorization also directed the employer to deduct one and one-half per cent of his weekly wages, the amount so deducted together with a similar amount contributed by the employer, to be set aside under the supervision of the Board of Arbitration.

PROVISIONS OF FINAL AGREEMENT

During the summer of 1923, attorneys representing both sides gave exhaustive study to the legal requirements necessary to embody the principles of the preliminary agreement in a binding legal document, and to create a valid trusteeship for the administration of the several unemployment funds. Late in the summer, definite agreement with the union, identical for all the Federation houses in the market, was reached, and these several agreements were signed and executed by the union and by each house early in October.

Under these identical agreements each fund is administered by a board of trustees that is legally distinct and separate from other boards. These boards are to have not more than seven members and the voting strength of the employer and the union is always the same regardless of the number of their respective representatives present at any meeting. John R. Commons is designated in each of the agreements as the neutral chairman of each of the boards of trustees. The union has designated the same persons as its representatives on all boards of trustees. For convenience in administration employers likewise, with two exceptions, have designated the same persons to represent them on boards of trustees. The two largest houses in the market, Hart Schaffner & Marx and B. Kuppenheimer & Company, have separate boards, each with representation by members of the firm.

The unemployment agreement is made to expire at the same time as the present trade agreement between the employers and the union, that is to say, on April 30, 1925. Provision is made, however, that in case of the extension or renewal of the agreement the fund shall pass under the jurisdiction of the agencies created to administer it in the new agreement. Title to the fund under no circumstances is to revert to the original contributors. In the case of merger of two or more corporations, the merged corporation has the same obligations under the agreement as the original parties. Should the agreement fail to be renewed, or the parties cease to do business, the fund remaining on hand is to be used for the payment of unemployment benefits to contributing employes as nearly as may be in conformity with the terms of the agreement; in such case the fund must be entirely disposed of within five years of the date at which the agreement expires.

SAFEGUARDING THE FUND

Disposition of the fund in case of failure to renew was a difficult problem. There was a strong feeling in some quarters that should the plan be discontinued or should a business be dissolved, the fund ought to revert to the original contributors. It was clear, however, that the administrative details involved in carrying out such a provision were practically insurmountable, especially in the case of employes. Moreover, it was believed that the possibility of having a fund revert might have an unstabilizing influence

that would place an obstacle in the way of successful negotiations for renewal; worse still, the prospect of reversion might do injury to the trade agreement between the parties, especially if there should be any possibility of later using for militant purposes any fund which might revert.

The point of departure from which all of the negotiations were carried on was frank acceptance of the necessity for safeguarding and doubly safeguarding the fund against any possible direct or indirect militant use by either party. This viewpoint is reflected in the agreement as signed, not only in the clauses which prevent reversion of the fund but also in the emphatic statement of this principle both in the body of the agreement and in the schedule setting forth the conditions for the payment of benefits.

Under the agreement title to the fund is vested absolutely in the Board of Trustees; except for the beneficiary right of contributing employes, neither contributing employes nor contributing employers have any right or title whatsoever in the fund after contributions are made.

In addition to the clauses fixing title to the fund and creating the Board of Trustees, the final agreement contains all possible safeguards against having the fund become liable or subject to attachment of any kind by third parties who have claims against the employers, the employes or the union.

OTHER IMPORTANT PROVISIONS

Another important provision of the agreement is the one which maintains the integrity of the trade agreement between the employers and the union, reserving to the agencies thereunder created the interpretation of the trade agreement as it affects the work of the Board of Trustees.

A further provision of the agreement carries over the provision of the preliminary agreement protecting the employer against double contributions in case state laws are passed compelling him to contribute to a public unemployment fund. The provision for the investment of the fund in United States securities is also carried over, with an added provision that the moneys required for current payments shall be deposited in not less than two Chicago banks connected with either the Clearing House or the Federal Reserve System.

The agreement contains the ordinary provisions concerning the powers of trustees, concerning meetings and voting, both in meetings and in writing, concerning proxies, the employment of agents, the payment of expenses, and concerning the keeping and auditing of records and accounts. There is also a provision that the manufacturer and the union shall keep such records as are necessary for the proper administration of the fund.

Concerning the size to which the fund may accumulate it is provided that whenever the fund reaches an amount equal to the total maximum unemployment benefits which would be payable during a period of two years to all of the then contributing employes of the manufacturer, further payment shall be suspended on the part of both the employer and the employe, and that contribution shall not be resumed until the fund is reduced to an amount less than the total maximum benefits payable to such employes during a period of one year.

The conditions under which benefits are to be paid are set forth in Schedule A, which is attached to and made a part of the agreement. They are substantially as follows:

1. To be eligible for benefit an employe must have been a member of the union and have made regular contri-

butions from May 1, 1923, or in case he became a member of the union after May 1, 1923, his eligibility for benefits begins one year after his first contribution.

2. No employe can receive more than five full weekly benefits in any one year.

3. Benefits are to be paid only for such involuntary unemployment as results from lack of work and inability to secure suitable employment.

4. Benefits are not to be paid to persons on strike or for unemployment that directly or indirectly results from strikes or stoppages.

5. In case the person voluntarily interrupts his payments to the fund he shall not receive benefit in excess of one full weekly benefit for every ten weeks full weekly contributions.

6. In case of complete unemployment such unemployment shall be deemed to begin on the date when the employe registers with the employment exchange.

7. The maximum benefit in any one week is 40 per cent of the full weekly wages, but must not exceed $20.

8. The benefits begin to accrue not earlier than January 1, 1924, nor later than May 1, 1924.

9. Other conditions concerning the payment of benefits are left to be determined by the Board of Trustees after hearing a report and recommendations from an advisory committee which is now considering the various questions involved. Chief among these questions are rules and regulations relating to the transfer of employes from one manufacturer to another, the return to employment of contributing employes temporarily withdrawing from the industry, the proper basis of calculating benefits in the case of short-time employment, the proper reduction of unemployment or short-time employment because of overtime employment, the proper limitation to be placed upon the amount to be received by any contributing employe during any one season of unemployment, a proper waiting period between the beginning of unemployment and the accrual of benefits and other matters of similar character.

These questions that are still unsettled involve difficult considerations not only of abstract justice as between different employes, but also administrative questions such as the keeping of records and the distribution of responsibility for records between employers, union and trustees. Wise decision of these matters is important not only from the standpoint of the burden of administrative expense, but the wise and efficient handling of these administrative questions will also determine to a large extent the accuracy with which the work will be done. With this thought in mind the agreement provides that the whole question of records and administrative detail as well as the question of rules and regulations concerning the unsettled questions in respect to benefits, shall be considered by a joint advisory committee before the Board reaches a decision concerning them.

Advisory committees are now at work collecting facts for submission to each of the three boards in the market. The committees of the three boards are working jointly so that any results reached will apply uniformly to the market as a whole. Each of the boards is now organized and the collection, paying in and investment of funds have already become largely a matter of administrative routine. Equitable allocation of expense as between the different funds has been taken care of by setting aside as an expense account one per cent of all contributions. This amount may be changed by vote of the boards of trustees as need requires. Arrangements have been made with

three different banks in Chicago under which the daily routine of receiving the funds that come in from the various pay rolls are handled, and by which there is a weekly purchase of securities in the amount which the size of the funds permit.

An office has been opened in which the records of employment (including short-time and overtime employment) accompanying contributions to the fund are being properly tabulated. It is expected that about January first the advisory committees dealing with records and with rules and regulations will make their reports to the boards of trustees, and that the boards will then determine all of the questions concerning short-time employment, unemployment, overtime employment, transfers, waiting periods, and other matters that have to be settled before the payment of benefits begins. The Board will also fix a date within the limit set by the agreement when benefits shall begin to accrue.

The success of the joint unemployment fund arrangement may depend in some measure upon the economic conditions that obtain in the industry. In large measure, however, it will depend upon the wisdom with which the trustees make their decisions and do their work. There can be no doubt that the agreement itself has been drawn with very great care, nor that careful thought has thus far been put into the questions of administrative detail as well as of the fundamental principles to be followed. If this care is continued, therefore as there seems to be every reason to think it will be, the unemployment experiment in the men's clothing industry will at least result in valuable contribution to the knowledge of the whole subject. It is probable, moreover, that its direct benefits to the industry, both in mitigating the burden of unemployment and in stimulating effort towards stabilizing employment, will be substantial.

Book Department

Business Cycles and Unemployment—*Report and Recommendations of a Committee of the President's Conference on Unemployment, including an investigation made under the auspices of the National Bureau of Economic Research*, with a foreword by Herbert Hoover. Pp. 405. Price, $4.10. New York: McGraw-Hill Book Company, Inc., 1923.

Business Cycles and Unemployment is one of the most important economic landmarks of recent years. Mr. Hoover in the foreword says:

> I am confident that it represents a definite advance in economic thought and offers suggestions that should make for progress. . . . The report seeks to drive home the facts that the enlargement of judgment in individual business men as to the trend of business and consequent widened vision as to approaching dangers will greatly contribute to stability, and that the necessary information upon which such judgments can be based must be systematically recruited and distributed. . . . The whole problem belongs to a vast category of issues which we must as a nation confront in the elimination of waste if we are to maintain and increase our high standards of living.

A score of specialists describe the business cycle and various methods of diminishing dangerous peaks and consequent deep valleys of stagnation and unemployment. Among them are T. S. Adams, Leo Wolman, N. I. Stone, Ernest S. Bradford, Julius H. Parmelee, William A. Berridge, and others of equal competence. A committee of the President's Conference on Unemployment, headed by Owen D. Young, of the General Electric Company, and composed of persons whose judgment carries weight in their respective fields of industry, labor, and social science, makes practical recommendations arising out of the investigators' reports. Directors of the Bureau of Economic Research, and of many varying shades of economic thought, read the manuscript, made constructive suggestions, and unite in approving the fact-finding report, though by their charter estopped from making recommendations. Among them are John R. Commons, Edwin F. Gay, Allyn A. Young, John P. Frey and Malcolm C. Rorty. Here and there the director has taken issue in a footnote with a statement by an investigator in the fashion so spicily set by Wells' *Outline of History*. Acknowledgment is made for assistance by many national organizations, including the Carnegie Corporation, American Association for Labor Legislation, U. S. Chamber of Commerce, Federated American Engineering Societies and Economic Association. The list of individuals giving specific assistance is impressive evidence of extraordinary team work.

The recommendations of the committee of the President's Conference on Unemployment are a bold challenge to laissez faire, and to a continuance of our tremendous waste of men, morale and capital. The causes of depression are not acts of God and comparable with the famines and cataclysms recorded since Biblical times, as proclaimed by a U. S. Senator during the last depression, but often man-made by the customary acts of business men and consumers who have not hitherto known better. The methods of prevention offered cannot be intelligently summarized in a review. They concern the pooling of statistical information with the Government by business men, the control of credit expansion by banks, certain policies by the Federal Reserve System, the expansion and contraction of public work and of certain semi-public and private construction in accordance with the phases of the business cycle, unemployment reserve funds, and the general practice by business executives of certain policies heretofore known only to a pioneer few.

Thus the book is directed not only to economists but to business men, engineers, bankers, labor unions, and citizen organizations which influence local and national governmental policies. It has already made its way into the curriculum of several universities. Wesley C. Mitchell, director of the study, has by able editing and arrangement welded the work of many into a

unified whole. Edward Eyre Hunt, Secretary of the President's Conference on Unemployment, has by promoting and guiding the undertaking projected the usefulness of that conference into the future and differentiated it from the many governmental agencies which resolve their brief hour and vanish without trace. Mr. Herbert Hoover has given initiative and his great influence in order to unite scientific business practice with sound statesmanship, and thus, stone by stone, to lay foundations of social security in the cement of economic progress.

OTTO T. MALLERY.

ANDREWS, BENJAMIN R. *Economics of the Household*. Pp. vii and 623. Price, $3.25. New York: Macmillan Company, 1923.

Economics of the Household may be recommended, not only to those who are void of knowledge on the subject, but to all thoughtful students of human welfare. Whether or not the volume be opened with expectation, it will be closed with profit, since it cannot fail to impress the mind of the reader at many points. Mr. Andrews accentuates the significance to the nation that lies in a recognition of the full economic meaning of the homes of its people. He presents the results of numerous surveys of living conditions, and his suggested budget adjustments for the establishment and maintenance of homes of the right type are very valuable.

Of course, the fundamentals in the support of a family are food, clothing and shelter; but the author makes plain that one's duty in home-making is not by any means limited to these, nor, in addition, even to what the law requires of parents along lines of protection. His analysis of household economics includes other equally strong claims which demand acknowledgment, and which are expressed through ministrations to the mental, moral and social natures. One becomes convinced that if young people could be taught, during the high school and college periods, those definite principles upon which the home must be maintained if it is to fulfill its many-sided purposes, there would be less unhappiness and fewer failures in the business partnership of home-making.

It is obvious that sharing of work, division of responsibility, coöperation in planning a budget, create a clear and normal atmosphere in the home which makes for the freedom and happiness of its occupants. Conscientious giving deserves and receives no small share of attention, and all through the book the value of efficient spending is emphasized, whether at the moment the writer is dealing with the subject of food, clothing, or recreation. The woman reader may well pause for reflection over the pages that insist upon intelligent expenditure of money, for it is she who disburses in considerable measure the contents of the pay envelope, and to her attention also those pages are commended that deal with the tyranny of fashion and the ethics of dress. Not only the money income, but the "social income," reaching the home through indirect economic routes, is treated in interesting fashion as part of the natural scheme of family life.

Mr. Andrews has sought and found a true point of vision for students of the subject who, if they follow his teaching, will be traveling on the right road.

My only criticism of the book is that it is unnecessarily voluminous, and that its author is overscrupulous in mentioning every detail that seems to approach his subject, whether directly or indirectly.

GERTRUDE B. BIDDLE.

ELLIS, DON CARLOS, and THORNBOROUGH, LAURA. *Motion Pictures in Education*. xvii + 284 pages, 8vo, cloth. Price, $2.50. New York: Thomas Y. Crowell Company, 1923.

An excellent review of *Motion Pictures in Education* is contained in the introduction written by Philander P. Claxton, former United States Commissioner of Education, now Provost of the University of Alabama. Dr. Claxton points out that the authors are well equipped through practical experience for their task, and summarizes their work as follows:

All the twelve chapters are interesting and valuable, and it is good to have brought together in one book a discussion of the history

and principles of visual education, the story of the origin and growth of motion pictures and their use in education, a critical discussion of their value and of different methods of using them, directions for installing apparatus, the kinds of films now available and where and how they can be had. . . .

The unfortunate lack of other studies in the same field makes it difficult to evaluate this work as a whole. There can be no doubt, however, that its many and somewhat detailed facts will be of practical value to teachers who are willing to adopt new methods in the school.

DONALD YOUNG.

OFFICIAL REPORT OF THE TENTH NATIONAL FOREIGN TRADE CONVENTION. Issued by the Secretary, National Foreign Trade Council. Pp. xxiii and 440. New York, 1923.

This volume is a stenotype report of the proceedings, the discussions, the speeches of the eight group sessions, and the addresses of the general sessions of the Tenth National Foreign Trade Convention, held at New Orleans, Louisiana, on May 2, 3, 4, and 5, 1923. It gives also a list of the delegates present, the organizations and companies represented, and the personnel of the convention. Approximately 900 delegates were in attendance representing almost every state in the union.

The general theme of this Tenth Convention was "European Conditions as Relating to World Trade." A summary of the opinions expressed would show that trade conditions have improved during the past year. Imports into the United States from practically all foreign countries were greater in 1922 than in 1921, thus increasing the purchasing power of the countries which sold us these imports. Our increased exports reflected this enlarged buying power of foreigners.

In its "final declaration" the Convention approved the Transportation Act of 1920, and advocated private ownership of our merchant marine as soon as feasible.

Every effort should be made to put these provisions (of the Act of 1920) into effect, and give to American owners the opportunity to show what American skill, experience and resourcefulness can do in the operation of ships, what they have done in other lines of competition with foreign nations.

Three general sessions and eight group sessions were held during the Convention. The general sessions dealt with present economic conditions in Europe, with general foreign trade conditions in the world, and transportation problems. The group sessions were taken up with discussions of the following topics:

1. Education for foreign trade
2. Problems of the export manager
3. Extending exports
4. Trading with Latin-America
5. Foreign credit
6. Trading with the Far East
7. Financing foreign trade
8. Export advertising

No one can pass a summary judgment on such a variety of opinions as are expressed in this volume. Two things, however, are clear from the proceedings of the Convention: (1) American exporters have come to realize that foreign trade "is no longer a refuge to be thought of only in times of domestic storm"; and (2) that American colleges of commerce, as well as American business men, are beginning to attack foreign trade problems in practical fashion. The proceedings of this Convention show that the experience of business men and business schools during the past five or six years has borne fruit in a better understanding of the problems involved in foreign trade, and a keener appreciation of the need and place of foreign trade in our economic life.

A careful reading of the volume, however, seems to indicate that in the mind of the majority, foreign trade still consists in selling American goods abroad. Fortunately several discussions remind business men that "imports pay for exports."

HARRY T. COLLINGS.

COWDRICK, EDWARD S. *The Industrial History of the United States.* Pp. 414. Price, $2.75. New York: Ronald Press.

"The Industrial History of the United States" is a short and useful textbook in readable style. The author, an industrial

engineer and presumably experienced in the management of industrial relations on a large scale, brings to his task a keen zest for the subject and a happy lack of prejudices. Neither foreign "deviltry" nor 100 per cent Americanism are used to explain industrial movements. For instance, the idea of industrial freedom, not the inherent wickedness of the British king, is found to be one of the causes of the War for Independence, "and in all later history one of the fundamental concepts of the American nation." Our Revolutionary forefathers are not paragons of virtue but

> their mutual suspicion and lack of unity were perverted manifestations of that individualism which rightly directed has been one of the strongest elements in the building of American industry. Likewise we may trace an intimate connection between the ideas of political democracy, which were both a cause and a result of the War for Independence, and that democracy in industry, which sometimes obscured, has never wholly disappeared from the nation's business life.

Our currency battles are described with clarity. Tariff policies are reduced to a commendable simplicity in which the main currents are easily remembered. The analysis of the economic effects of slavery is done with fairness, a quality which marks the whole book. The business cycle is superficially described without any intimation that it may be controlled. The chapter on Labor Organization so successfully avoids all controversial subjects as to be of little value. The student will not find whether labor organizations have or have not improved the workers' condition, or to what degree the various types have been or are useful or detrimental to workers, or to general economic welfare. Although the author describes the aims of the Knights of Labor, "then looked upon as dangerously radical, but now commonplace and many of them long since achieved," there is nothing to interpret the reasons behind the struggle for the so-called "closed shop" or to contrast the social effects of the twelve-hour day in the open shop steel industry with the hours and working conditions of unionized industry. War and post-war events are narrated without constructive analysis and with several popular fallacies attached—for instance, the "buyers' strike" of 1920–1921. The author has conscientiously clung to narrative history and sponsors no industrial policies.

OTTO T. MALLERY.

MUNRO, WILLIAM BENNETT, PH.D., LL.B. *Municipal Government and Administration.* 2 v. Pp. 976. New York: The Macmillan Company, 1923.

In recent months many of our celebrities have been induced to imagine themselves banished from the haunts of men, and then to prepare lists of ten or more volumes which they should like to take with them to their retreats. If a student of municipal government were told that he was about to be transported to some far corner of the earth, and that he must limit his library to a scant two volumes, he would do well to name as his first choice the first volume of Professor Munro's "Municipal Government and Administration," making volume two his second selection. For this carefully constructed and admirably written work is without doubt the best general treatise in the field of city government.

Volume one, which is labelled "Government," is substantially a revision and expansion of the author's "Government of American Cities," with a few pages drawn in large part from his text on European municipal government. Some phases, however, such as the party system and popular control of city government, are treated in much greater detail. The historical sketch comprising the early chapters is exceptionally well done.

But the real contribution is found in volume two, which is devoted to the organization and work of the city's administrative departments. Such matters as city planning, water supply, public sanitation, fire and police protection, lighting, housing, transportation and the like are described in detail, and some general suggestions are made for improvement. There is a wealth of references for students wishing to carry further their investigations.

In his new text Professor Munro is, as always, lucid. His thoughts are for the

most part presented so clearly and concisely as to be readily grasped by the reader without undue mental exertion—a factor to be considered in a textbook intended for undergraduate consumption. He is sometimes guilty of ambiguity, however, as on page 168 of the first volume, where he lists the bill of rights of the Federal Constitution among the limitations upon state authority.

In one respect, at least, Munro's new work is far superior to any of his earlier books. It is not only lucid; it is readable. Instead of a cut-and-dried statement of facts, one finds an intensely interesting narrative of men and events. Pointed illustrations there are in abundance, and epigrams are not lacking. The author frequently makes far reaching generalizations from what seem to be rather slender foundations of fact, but generalizations may well be pardoned in a work having for its scope the entire field of municipal government. The affairs of our cities cannot be treated in detail within the narrow compas of nine hundred pages.

AUSTIN F. MACDONALD.

WILLIAMS, ROTH. *The League of Nations Today. Its Growth, Record and Relation to British Foreign Policy.* Pp. 223. New York: Henry Holt and Company, 1923.

LEVERMORE, CHARLES H. *Third Year Book of the League of Nations.* Pp. 434. Price, $1.50. The Brooklyn Daily Eagle, 1923.

Mr. Williams has written a volume a little of which is directed to the English public only, but is for the most part a valuable survey of the League for all readers. He has given us what we need—a book which neither lauds the League to the skies nor indulges in harsh criticism.

The League is not a super-state; neither is it moribund nor futile. It is a number of nations—fifty-three at the present writing—who have agreed to apply a system of coöperation. It is not even an institution. Nothing has happened except that most of the nations of the world have been able to sign the Covenant of the League, and thus have become a part of a "system of international coöperation and peaceful settlement of disputes." It must operate in a world of conflicting interests, and was organized at a time when the need was urgent but conditions trying. There have been occasions when the discouragement was great, but remarkable progress has been made. Needless to say, the Covenant has been shown to have defects, but modifications by interpretation and otherwise are constantly being made in order to adapt the system to the problems to be solved.

There are five sections of Mr. Williams' book. The first tells why the League is necessary and what it is (as well as several things it is not). The others tell in turn how the League is organized, what it has done, the position today and how to use the League. Weaknesses and mistakes are not glossed over, but are clearly pointed out. The treatment is strongly sympathetic with the League, but the author has succeeded in maintaining poise, and the recital is judicial in tone. It is by far the best volume on the subject that has yet appeared. If as widely read as it should be in the United States, it ought to dissipate many of the prevalent misconceptions of the League and its activities.

Dr. Levermore is performing a highly commendable work in the annual compilation of a *Year Book of the League.* The third one has now appeared, and is a valuable compendium of fact. Those who have fancied the League dead, if not buried, would be amazed at the extent and diversity of its work as shown in this volume. Its significance is emphasized in two ways. One is the large amount and variety of work it performs; the other is the way in which its activities are intertwined with political and economic issues in all parts of the world.

The result is to make the volume somewhat of a handbook on international affairs. In its preparation the author at times introduces topics whose connection with League activities is not immediate, but in every case the material is important and presented in a convenient form.

ERNEST MINOR PATTERSON.

EDWARD ALSWORTH ROSS. *The Social Revolution in Mexico.* Pp. 176. Price, $1.75. Century Company.

Dr. Ross has given to the American public a most readable account of the great social changes that have taken place in Mexico since the Madero revolution in 1910. In spite of his relatively short stay in Mexico, he has viewed the situation with the trained eye of the sociologist and has analyzed with unusual skill and sympathetic understanding the changes that have taken place during the last few years in Mexico and that are still in process of accomplishment. This book is indispensable to anyone who desires to understand the present Mexican situation and it is certain that, if the spirit that animated Dr. Ross in writing this book were to become more general throughout the United States, many of the questions now pending between the two countries would be well on the way toward solution.

ACTIVIDADES DE LA LIGA DE LAS NACIONES. *Por Cosme de la Torriente, President de la Delegación de Cuba y de la Tercera Comisión de la Tercera Asamblea. Prologo de Antonio S. de Bustamente, Juez del Tribunal Permanente de Justicia Internacional.* Habana, Imp. de Rambla, Bouza y Ca., 1923 (xviii, 491 p. paper covers. 27 cms. Price, $2.00).

The distinguished author of this book, one of the leading jurists of Cuba and now President of the Assembly of the League of Nations, has performed a great service to the League in setting forth so comprehensively the manifold activities of the League. Of all the works that have appeared relating to this subject this is by far the most complete and the most illuminating in its analysis of the political as well as the technical activities of the League.

As chairman of the Cuban delegation to the Second, Third and Fourth Assemblies of the League, and as presiding officer of the Fourth Assembly, Dr. de la Torriente has had exceptional opportunity to study the situation at close range. The work is one that will be indispensable to every student of international organization.

MARSHALL, ALFRED. *Money, Credit and Commerce.* Pp. 369. London: Macmillan and Company, 1923.

All economists unite in welcoming a volume by Professor Marshall. When he published his *Principles of Economics* in 1890 neither he nor his readers anticipated a delay of nearly thirty years before the appearance of *Industry and Trade* which dealt especially with industrial technique and business organization.

At that time he promised a third volume, which has now appeared, with the title *Money, Credit and Commerce.* The volume is divided into four parts or books: (1) money; (2) business credit; (3) international trade; and (4) fluctuations of industry, trade and credit. Professor Marshall has followed his well-known practice of collecting much of his best work in appendices, thus leaving the main development of his treatment unbroken by the digressions that would otherwise be introduced.

E. M. P.

BENSON, REAR ADMIRAL WILLIAM S. *The Merchant Marine.* Pp. 183. Price, $1.75. New York: The Macmillan Company.

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Introductory

The Monroe Doctrine Centenary

Address of Honorable L. S. Rowe, President of the American Academy of Political and Social Science, in introducing the Secretary of State, Honorable Charles E. Hughes

At the Monroe Doctrine Celebration held at Philadelphia, Friday evening, November 30, 1923

Dr. Rowe, in presenting the Secretary of State, said in part:

THE great public pronouncement whose centenary we are tonight celebrating marked the beginning of an epoch of Pan-American service of which we as citizens may well be proud. The century which has elapsed finds us facing international problems far vaster in extent and demanding the same breadth of view and far-seeing statesmanship which characterized the leaders of 1823.

The celebration of this evening, and that of tomorrow evening, were arranged with a view to ascertaining the obligations of the present and the immediate future rather than to congratulate ourselves on the services of the past. It is therefore most fitting that we should have invited on this occasion as our guest of honor the statesman responsible for the direction of American foreign policy, he who enjoys the confidence of the American people to an extent almost unparalleled in our history. I have great pleasure in presenting this audience to the Secretary of State—the Honorable Charles E. Hughes.

The Centenary of the Monroe Doctrine

By Honorable Charles E. Hughes
Secretary of State of the United States

Mr. Chairman, Members of the Academy, Ladies and Gentlemen:

FOREIGN policies are not built upon abstractions. They are the result of practical conceptions of national interest arising from some immediate exigency or standing out vividly in historical perspective. When long maintained, they express the hopes and fears, the aims of security or aggrandizement, which have become dominant in the national consciousness and thus transcend party divisions and make negligible such opposition as may come from particular groups. They inevitably control the machinery of international accord which works only within the narrow field not closed by divergent national ambitions or as interest yields to apprehension or obtains compensation through give and take. Statesmen who carry the burdens of empire do not for a moment lose sight of imperial purposes and requirements. When a balance of power is deemed essential to national security you cannot conjure it away by any form of words. The best of diplomatic instruments, the conference, has no magical potency to dispose of these strongly held national convictions.

We are fortunate in our detachment from many difficulties and dangers which oppress the imagination of other peoples, but we should resist the tendency to indulge in self-praise. When we have a clear sense of our own interests, we are just as inflexible as others. The great advantage we have had is that, coming to independence in a world afflicted with the long rivalries of military powers, the traditions of conquest, and the dreams of empire, we sought simply the assurance of freedom, and our national instinct has been opposed to aggression and intervention. The Monroe Doctrine was the embodiment of this sentiment. Through the one hundred years since its announcement, despite the strife of parties and opposing convictions as to domestic issues, it has been a unifying principle, contributing not only to our security and peace but to our dignity and prestige as a Power capable of thus asserting and maintaining a vigorous independent policy. The attitude of American statesmen toward this Doctrine, with few exceptions, has been that expressed in the familiar words of Daniel Webster: "I look on the message of December, 1823, as forming a bright page in our history. I will neither help to erase it or tear it out; nor shall it be by any act of mine blurred or blotted."

The anxiety to escape the toils of European politics and intrigues was early manifested. John Adams in 1782 wrote in his diary, " 'You are afraid,' says Mr. Oswald today, 'of being made the tools of the Powers of Europe.' 'Indeed I am,' says I. 'What Powers?' said he. 'All of them,' said I. 'It is obvious that all the Powers of Europe will be continuously maneuvering with us to work us into their real or imaginary balances of power. . . . Indeed it is not surprising; for we shall very often, if not always, be able to turn the scale. But I think it ought to be our rule not to meddle.' " We were isolated and could not be. The European Powers were at our doors; their con-

flicts had embroiled the New World from the beginning. There was no thought of escaping constant dealings with these Powers, whose rivalries menaced our peace, but upon what basis should these dealings be had? We had the choice of seeking the protection of alliances, or the more difficult course of maintaining independence. With splendid courage no less than with profound wisdom the Fathers chose the latter course at once conserving our safety and enhancing our influence. It was the choice of an infant nation, but of a nation conscious of the promise of its influence as a World Power.

This was the admonition of the Farewell Address: "Observe good faith and justice toward all Nations. Cultivate peace and harmony with all. . . . The great rule of conduct for us, in regard to foreign Nations, is in extending our commercial relations, and have with them as little *political* connexion as possible. . . . Europe has a set of primary interests which to us have none, or a very remote relation. Hence, she must be engaged in frequent controversies, the causes of which are essentially foreign to our concern. Hence, therefore, it must be unwise in us to implicate ourselves by artificial ties in the ordinary vicissitudes of her politics or the ordinary combinations and collisions of her friendships, or enmities. . . . Why, by interweaving our destiny with that of any part of Europe, entangle our peace and prosperity in the toils of European ambition, rivalship, interest, humour, or caprice?"

As our paramount interest dictated abstention from participation in European politics, so it also required that the machinations of foreign Powers should not have increased opportunity here, and when the independence achieved by the Spanish colonies in this hemisphere was threatened by the imposing combination of European sovereigns, styled the Holy Alliance, this correlative policy found emphatic expression in Monroe's message: "We should consider," said he, "any attempt on their part to extend their system to any portion of this hemisphere as dangerous to our peace and safety. With the existing colonies or dependencies of any European Power we have not interfered and shall not interfere. But with the governments who have declared their independence and have maintained it, and whose independence we have, on great consideration and on just principles, acknowledged, we could not view any interposition for the purpose of oppressing them or controlling in any other manner their destiny, by any European Power, in any other light than as the manifestation of an unfriendly disposition toward the United States." And on the same occasion, in response to Russian pretensions, it was announced with equal emphasis "that the American Continents, by the free and independent condition which they have assumed and maintained, are henceforth not to be considered as subjects for future colonization by any European Powers."

These are the two points of the Monroe Doctrine. The most significant circumstance connected with the form of the declaration of the nonintervention principle was that it was made by the United States alone. The British Foreign Secretary, George Canning, had proposed a joint declaration with Great Britain, and this was favored by both Jefferson and Madison. But, with the advice of John Quincy Adams and in view of the fact that Great Britain had not recognized the new Republics, Monroe decided upon a separate declaration on our sole responsibility and joined with it the

statement of the noncolonization principle, which not only had not been suggested by Canning, but was wholly opposed to his views.

It is not my intention to repeat what I have said in a recent address with respect to the Doctrine but rather, restating its true content, to inquire as to its place in the scheme of the foreign policies of the United States as a World Power in the Twentieth Century with respect to the region of the Pacific Ocean and the Far East, to Europe, and to this hemisphere.

Certainly, after one hundred years, there should be no hesitancy in defining what we mean by the Monroe Doctrine and this, despite those critics who seek to disparage it by professing to be unable to understand it, and those prophets of a new era who would thrust it aside, and those zealots who would use it as a convenient warrant for any sort of action they may favor in this part of the world, is, after all, not a very difficult task. In the original declaration there were, as I have said, two points stating the opposition of this Government, first, to any action by European Powers to extend their system to this hemisphere, or to any interposition by them for the purpose of oppressing or controlling the destiny of the new American Republics, and, second, to the future colonization by European Powers of the American Continents. In all that has been said or done since the declaration of Monroe it can be regarded as modified in only two particulars. What was said with Europe exclusively in view must be deemed equally applicable to all non-American Powers; and the opposition to the extension of colonization was not dependent upon the particular method of securing territorial control, and, at least since Polk's time, may be deemed to embrace opposition to acquisition of additional territory through transfer of dominion or sovereignty. Neither of these modifications change the Doctrine in its essentials and it may thus be summarized, as I have elsewhere stated, as being opposed (1) to any non-American action encroaching upon the political independence of American States under any guise, and (2) to the acquisition in any manner of the control of additional territory in this hemisphere by any non-American Power. How does the Doctrine thus defined stand in the present scheme of American policy? And by policy I do not mean the proposals of any party or group, but those principles and aims which have been supported either by definite action of the Executive within his authority or of the treaty-making power, or by a sentiment so preponderant and long cherished that it may be called the opinion of the country. The changes of one hundred years in population, extent of territory, and developed resources, and our military potency are obvious enough and need no recital. But have the changes altered our policy or has it become inconsistent with the Doctrine?

In relation to the Pacific Ocean and the Far East we have developed the policies of (1) the Open Door, (2) the maintenance of the integrity of China, (3) coöperation with other Powers in the declaration of common principles, (4) coöperation with other Powers by conference and consultation in the interests of peace, (5) limitation of naval armament, and (6) the limitation of fortifications and naval bases.

The *Empress of China*, fitted out by Robert Morris and others, sailed to Canton in 1784, and by the year 1805 thirty-seven American vessels cleared for that port. In 1843 Daniel Webster, Secretary of State, instructing Caleb Cushing as Envoy Extraordinary and Minister Plenipotentiary to China, said: "You will signify, in decided

terms and a positive manner, that the Government of the United States would find it impossible to remain on terms of friendship and regard with the Emperor if greater privileges or commercial facilities should be allowed to the subjects of any other government than should be granted to citizens of the United States." Most-favored-nation treatment was secured in the Treaty of 1844, with respect to which Caleb Cushing said: "Thus, whatever progress either Government makes in opening this vast Empire to the influence of foreign commerce is for the common good of each other and of all Christendom." Thus was laid the foundation for the policy of the Open Door, or equality of opportunity. When the great Powers took advantage of the weakness of China to obtain spheres of interest in order to facilitate exploitation and to restrict free commercial intercourse, this Government, through Secretary Hay, sought to establish by international accord the principle of the Open Door, and with this to obtain the recognition and preservation of the territorial and administrative integrity of China. Despite many obstacles, caused by the disregard of professions and the desire to take advantage of the opportunities afforded by the progressive disintegration of China, this Government continued earnestly to press these principles, and at the recent Washington Conference the postulates of American policy were taken out of the unsatisfactory form of diplomatic notes and, with a more adequate and explicit statement, were incorporated into a solemn international engagement, signed by the nine Powers especially interested in the Far East. This Treaty has been ratified by all but one of these Powers, and it is hoped that ratification by that Power will not be long deferred.

While the diplomatic exchanges between the Powers, in which the Open Door policy was fully accepted, were not, of course, satisfactory and later became largely ineffective, they were so strongly supported by public opinion in this country as to make it clear that while we eschewed alliances we were ready to join in declarations of common principles where this method of coöperation would supply the best means of attaining the desired object. This was again illustrated by the resolutions adopted at the Washington Conference.

Again, through the Four-Power Treaty between the United States, Great Britain, France, and Japan, which is to continue for 10 years and thereafter subject to termination on 12 months' notice, we have established another form of coöperation with regard to insular possessions and insular dominions in the region of the Pacific Ocean. It is provided that if any controversy arises between any of the parties out of any Pacific question which cannot be settled by diplomacy, with regard to their rights in relation to these possessions and dominions, they shall invite the other parties to the Treaty to a joint conference to which the whole subject will be referred for consideration and adjustment. Also, if the rights sought to be safeguarded by the Treaty are threatened by the aggressive action of any other Power, the parties shall communicate with one another fully and frankly in order to arrive at an understanding as to the most efficient measures to be taken, jointly or separately, to meet the exigencies of the particular situation. In giving assent to this Treaty the United States Senate made the reservation, which in no sense departed from the intent of the Treaty, that it should not be regarded as a commitment to armed force, or alliance, or obligation

to join in any defense. Thus we have definitely adopted the policy for the protection of our insular possessions, and for the preservation of peace in the Pacific region, of conference and consultation with other Powers.

Limitation of naval armament has manifest relation to our policies in the region of the Pacific Ocean and the Far East, but it has, of course, a much wider scope and expresses our strong desire to avoid extravagant outlays and the competition in armament which is provocative of war. In the proposals which our Government made to this end we were carrying forward an American principle which as early as 1794 Alexander Hamilton recommended for application to the Great Lakes and which was so applied in the Rush-Bagot Agreement of 1817. It had been the desire of our Government that the project of reduction or limitation of armament which failed in the First Conference at The Hague in 1899 should be taken up in the Second Conference in 1907. And we then considered this matter, and we still consider it, so far as land armament is concerned, as "unfinished business," to use the phrase found in the instructions to our delegates at the Second Hague Conference.

Further, in support of this policy we were willing to agree to certain defined limitations as to fortifications and naval bases in the Pacific Ocean, maintaining for 15 years, or until the end of the year 1936, and thereafter subject to termination on two years' notice, the status quo with respect to fortifications or naval bases in the Philippines and Guam. This was sufficiently emphatic with respect to our nonaggressive and peaceful intentions in the East, and yet it merely confirmed the policy of Congress, which has never had the intention of fortifying either the Philippines or Guam. As indicative of this phase of our policy with respect to these possessions, which we acquired as the result of the Spanish War, let me repeat what Senator Lodge said in the course of the debate in the Senate on the recent naval treaty. With respect to Guam, he said: "We took that island in the Spanish-American War. . . . We have had so little interest in the island that we have never passed a line of legislation in regard to it or to provide for its government or to make any provision about it at all. . . . We have never fortified it, and nobody would vote to spend money in fortifying it." With respect to the Philippines, he said: "The Philippines will be in exactly the condition in which they now are and have been ever since they were taken. . . . We shall never fortify them. It would cost hundreds of millions of dollars to fortify them. . . . We are not going to do it."

How do these policies in the region of the Pacific Ocean square with the Monroe Doctrine? Is there any inconsistency? Has our entrance into this region as a World Power of first rank led us to violate our traditions? Manifestly not. We fought the Spanish War to put an end to an intolerable nuisance at our very door, and to establish and make secure the independence of Cuba, not to override it. And as a consequence of victory in that war we acquired distant possessions, but not with the purpose of making these a basis for encroaching upon the territory or interfering with the political independence of the peoples of the eastern nations. In safeguarding the integrity of China, in securing equality of commercial opportunity, in endeavoring to forestall efforts at exploitation and aggression, in seeking to remove suspicion and allay apprehensions, and in enlarging through assured tranquillity the opportunities of peaceful com-

merce, we have been pursuing under different conditions the same aims of independence, security, and peace which determined the declaration of Monroe.

With respect to Europe, our policy has continued to be in the phrase of Jefferson: "Peace, commerce, and honest friendship with all nations, entangling alliances with none." We entered the Great War, not violating our tradition, for the cause of liberty itself was at stake. We have emerged from the war with the same general aims that we had before we went in. Though victors, we have sought neither territory nor general reparations. Our people have borne their own burdens and in large part we are bearing the burdens of others. We are not seeking to dictate to Europe or to deprive anyone of rights. But we do desire peace and economic recuperation in Europe. We contributed our arms in the interest of liberty and to destroy the menace of an autocratic power, but not to secure the economic prostration of a vanquished people. We have the deepest sympathy with the people of France; we warmly cherish their ancient friendship. We desire to see France prosperous and secure, with her wounds healed and her just demands satisfied. We desire to see a united and prosperous Germany, with a will to peace, making amends to the full extent of her power and obtaining the appropriate rewards of her labor and skill. We wish to see an end to the waste of military efforts and the easing of the burdens of unproductive expenditures. We wish to see the fires of hatred quenched. It is because of these earnest desires that we have hoped, as was stated in the recent communication to the British Government, that the solution of the present grave problems would be sought in fair and comprehensive inquiry in which all interested might participate and which would be inspired by the determination to find means to restore the productive activities through which alone reparations can be paid, and to give opportunity for the reasonable contentment and amicable relations of industrious peoples through which alone peace and security can be assured.

The bitter controversy which followed the war showed with what tenacity we still hold to the principle of not meddling in the political strife of Europe. It is true that the spread of democratic ideas and the resulting change in governments have removed the danger of organized effort to extend to this Continent the European "political system" of 100 years ago. But Europe still has "a set of primary interests" which are not ours. As Washington said: "She must be engaged in political controversies the causes of which are essentially foreign to our concern." Unity in war did not avail to change the divergent national aims and policies in peace. It is not that our interests may not be affected injuriously by such controversies. That was true in the days of Washington, Jefferson and Monroe; indeed the effect of changes and developments is that we are far better able to bear such injuries today than we were then, as is sufficiently illustrated by our sufferings during the Napoleonic Wars. But it was, despite such injuries, the abiding conviction that we had better bear these ills than suffer the greater evils which would follow the sacrifice of our independent position. We still hold to that view. The preponderant thought among us undoubtedly is that our influence would not be increased by pooling it. The influence that is due to our detachment and impartiality could not long be maintained if we should substitute the rôle of a partisan in European quarrels, and the constant efforts of propagandists have brought vividly

before us the fact that where the direct American interest is not clearly perceived foreign controversies afford abundant opportunity for the play among us of intense racial feeling. What was true in Monroe's day is even more true today in view of our vast population drawn from many countries and reproducing here the conflicts of European interests. It is not to our interest to adopt a policy by which we would create or intensify divisions at home without healing divisions abroad. And it must be always remembered that the moral force of our expressions depends upon the degree of the preponderance of the sentiment behind them. Each group intent upon the assertion of its own demands forgets the equal insistence of others. But when all is said, there is still no doubt of our desire to be helpful in every practicable way consistent with our independence and general aims. We have poured out our wealth without stint both in charity and investment and the important productive enterprises undertaken abroad since the war have been supported by American capital. The difficulties which beset Europe have their causes within Europe and not in any act or policy of ours.

Generally, our policies toward Europe may thus be summarized: We are still opposed to alliances. We refuse to commit ourselves in advance with respect to the employment of the power of the United States in unknown contingencies. We reserve our judgment to act upon occasion as our sense of duty permits. We are opposed to discriminations against our nationals. We ask fair and equal opportunities in mandated territories as they were acquired by the Allies through our aid. We desire to coöperate according to our historic policy in the peaceful settlement of international disputes which embraces the policy of judicial settlement of such questions as are justiciable. It is our purpose to coöperate in those varied humanitarian efforts which aim to minimize or prevent those evils which can be met adequately only by community of action. For example, we are at this moment leading in the effort to put a stop to the abuse of narcotic drugs. We strongly support, as our recent action has shown, international conferences where the conditions are such that they afford an instrumentality for the adjustment of differences and the formulation of useful conventions. We seek to aid in the reëstablishment of sound economic conditions. In short, our coöperation as an independent State in the furtherance of the aims of peace and justice has always been and still is a distinctive feature of our policy.

There is plainly no inconsistency between these policies and the Monroe Doctrine. Our position as a World Power has not affected it. The question is whether that Doctrine is still important under changed conditions. The answer must be in the affirmative. The fact that the intervention of non-American Powers in this hemisphere is not threatened at this moment cannot be deemed to be controlling. The future holds infinite possibilities, and the Doctrine remains as an essential policy to be applied wherever any exigency may arise requiring its application. To withdraw it, or to weaken it, would aid no just interest, support no worthy cause, but would simply invite trouble by removing an established safeguard of the peace of the American Continents.

While retaining the Doctrine, we should make every effort to avoid its being misunderstood. If its import has been obscure, it is largely because it has often been treated as though it were our sole policy in this hemisphere, and as though every action bearing

upon our relation to our sister Republics must be referred to it. Attempts to stretch the Doctrine have made it in some quarters a mystery and in others a cause of offense. Treating the Doctrine as a catch-all has not only given rise to much unnecessary debate but has been harmful to our just influence by arousing fears of latent possibilities of mischief and affording opportunities to those few but busy persons who are constantly seeking to foster a sentiment hostile to this country.

By correct definition of the Doctrine, I do not mean a statement in advance of every application of it. That, of course, as in the case of any principle, would be quite impossible. The important thing is the understanding of the principle itself. It should be recognized that the Doctrine is only a phase of American policy in this hemisphere and the other phases of that policy should be made clear. It would not be entirely correct to say that the Doctrine is merely negative, for it is a positive declaration that certain action on the part of non-American Powers in relation to this hemisphere will be regarded as dangerous to our peace and safety and as the manifestation of an unfriendly disposition. But the Doctrine is a principle of exclusion. Both with reference to the declaration as to nonintervention and to that as to extension of territorial control, it aims directly at the exclusion of interposition by non-American Powers. In recognizing these limitations of the Doctrine, we do not detract from its importance; it gains rather than loses by such clarification. The principle of exclusion embodies a policy of self-defense on the part of the United States; it is a policy set up and applied by the United States. While the Monroe Doctrine is thus distinctively a policy of the United States maintained for its own security, it is a policy which has rendered an inestimable service to the American Republics by keeping them free from the intrigues and rivalries of European Powers. The same, or similar, principles might, of course, be set up and applied by any or all of our sister Republics, and it is believed that each of them would be benefited by having such principles as a definite part of her foreign policy. We have always welcomed declarations by other American States as to their determination thus to safeguard their independence. We have also been gratified at the acquiescence in these principles by European Powers.

But fully recognizing the value of the Doctrine, it still remains true that it simply states a principle of opposition to action by non-American Powers. It aims to leave the American Continents free from the described interposition, but it does not attempt to define in other respects our policies within this hemisphere. Our affirmative policies relating to our own conduct in relation to other American States, and not merely our policy with respect to the conduct of non-American Powers, should be clearly envisaged. Those affirmative policies, while distinct from the mere principle of exclusion set forth in the Monroe Doctrine, are not inconsistent with that Doctrine but rather constitute its fitting complement.

First.—We recognize the equality of the American Republics, their equal rights under the law of nations. Said Chief Justice Marshall: "No principle of general law is more universally acknowledged than the perfect equality of nations. . . . It results from this equality that no one can rightfully impose a rule upon another."

At the first session of the American Institute of International Law, held in Washington in the early part of 1916, the jurists representing the American

Republics adopted a declaration of the rights and duties of nations. This declaration stated these rights and duties "not in terms of philosophy or of ethics but in terms of law," supported by decisions of the Supreme Court of the United States. The declaration set forth the following principles:

I. Every nation has the right to exist, and to protect and to conserve its existence; but this right neither implies the right nor justifies the act of the State to protect itself or to conserve its existence by the commission of unlawful acts against innocent and unoffending States.

II. Every nation has the right to independence in the sense that it has a right to the pursuit of happiness and is free to develop itself without interference or control from other States, provided that in so doing it does not interfere with or violate the rights of other States.

III. Every nation is in law and before law the equal of every other nation belonging to the society of nations, and all nations have the right to claim and, according to the Declaration of Independence of the United States, "to assume, among the powers of the earth, the separate and equal station to which the laws of nature and of nature's God entitle them."

IV. Every nation has the right to territory within defined boundaries and to exercise exclusive jurisdiction over its territory, and all persons whether native or foreign found therein.

V. Every nation entitled to a right by the law of nations is entitled to have that right respected and protected by all other nations, for right and duty are correlative, and the right of one is the duty of all to observe.

It cannot be doubted that this declaration embodies the fundamental principles of the policy of the United States in relation to the Republics of Latin-America. When we recognized these Republics as members of the family of nations we recognized their rights and obligations as repeatedly defined by our statesmen and jurists and by our highest court. We have not sought by opposing the intervention of non-American powers to establish a protectorate or overlordship of our own with respect to these Republics. Such a pretension not only is not found in the Monroe Doctrine but would be in opposition to our fundamental affirmative policy.

Second.—It follows that it is a part of our policy to respect the territorial integrity of the Latin-American Republics. We have no policy of aggression; we do not support aggression by others; we are opposed to aggression by any one of the Latin-American Republics upon any other.

Fortunately, however, under present conditions, there is no reason to apprehend such aggression. History shows that boundary disputes not infrequently give rise to action which in reality is of an aggressive character but is sought to be justified by territorial claims. There are but few of these controversies still open in Latin-America. Argentina and Chile resolved their boundary dispute by arbitration. The boundary controversy between Argentina and Brazil was also submitted to arbitration and the decision has been loyally carried out. Chile and Peru have found it possible, and we were privileged to give the aid of our good offices in the matter, to provide for the submission to arbitration of the questions which have long vexed their relation growing out of the Tacna-Arica controversy and the Treaty of Ancon. There are a few minor boundary questions in Latin-America, but there is no reason to doubt that they will be disposed of peacefully. It is believed that no aggression is threatened in Latin-America.

Third.—States have duties as well as rights. Every State on being received into the family of nations accepts the obligations which are the essential con-

ditions of international intercourse. Among these obligations is the duty of each State to respect the rights of citizens of other States which have been acquired within its jurisdiction in accordance with its laws. A confiscatory policy strikes not only at the interests of particular individuals but at the foundations of international intercourse, for it is only on the basis of the security of property validly possessed under the laws existing at the time of its acquisition that the conduct of activities in helpful coöperation are possible. Each State may have its code of laws in accordance with its conception of domestic policy, but rights acquired under its laws by citizens of another State it is under an international obligation appropriately to recognize. It is the policy of the United States to support these fundamental principles.

Fourth.—It is the policy of this Government to make available its friendly assistance to promote stability in those of our sister Republics which are especially afflicted with disturbed conditions involving their own peace and that of their neighbors. It is the desire of the United States to render this assistance by methods that are welcomed and which are consistent with the general policies above stated. For example, in the case of the Central American Republics, it has been our constant endeavor, in the interest of the maintenance of their integrity and sovereignty, to facilitate by our good offices such agreements between themselves and such measures of security and progress as will favor stable and prosperous conditions. This has been the object of the conferences of Central American Republics, and at the last conference, held in Washington in December, 1922, an important advance was made. It is not too much to say that if the treaties and conventions then formulated and signed are ratified and carried into effect there will be no probability of further serious disturbances in Central America, and these Republics, favored with vast natural resources, will enter upon an era of tranquillity and will enjoy opportunities of almost unlimited prosperity.

In promoting stability we do not threaten independence but seek to conserve it. We are not aiming at control but endeavoring to establish self-control. We are not seeking to add to our territory or to impose our rule upon other peoples.

Fifth.—The United States aims to facilitate the peaceful settlement of difficulties between the governments in this hemisphere. This policy has had notable illustration in our own relation to our neighbor on the north, the Dominion of Canada, which is justly proud of its position in "the community of nations known as the British Empire." We have a boundary with Canada, including that of Alaska, of about 5,500 miles unfortified. Through arbitration we have disposed of such serious controversies as those relating to the Behring Sea fisheries rights, the Alaska boundary, and the North Atlantic coast fisheries. We have an International Joint Commission for the purpose of investigating and reporting upon questions relating to boundary waters and other questions arising along the boundary between Canada and the United States. Our 100 years of peace furnish a shining example of the way in which peoples having an inheritance of bitterness and strife have been able to live in friendship and settle all their differences by peaceable methods.

With respect to the Latin-American Republics it is our policy not only to seek to adjust any differences that may arise in our own intercourse but, as I have said, to extend our good offices to

the end that any controversy they may have with each other may be amicably composed. We are seeking to establish a *Pax Americana* maintained not by arms but by mutual respect and good will and the tranquillizing processes of reason. We have no desire to arrogate to ourselves any special virtue, but it should constantly be recognized that the most influential and helpful position of the United States in this hemisphere will not be that of the possessor of physical power but that of the exemplar of justice.

In connection with this aim, it is gratifying to note that the treaties between the United States and other countries providing for commissions of inquiry, in the interest of full investigation and consideration of causes of difference before resort to hostilities, and the similar treaty concluded in February, 1923, between the United States and the Republics of Central America, formed the basis of the conclusion at the Santiago conference for a general treaty for the submission to commissions of inquiry of controversies arising between the American Republics.

Sixth.—In seeking to promote peace, as well as to aid in the reduction of unproductive expenditures, this Government has sought to encourage the making of agreements for the limitation of armament. Through our treaty with the great naval powers we have limited our capital ships, and we have voluntarily reduced our land forces. One of the treaties negotiated at the Central American conference provides for the limitation of armament on the part of the Central American Republics. At the recent Santiago conference it was not possible to reach an agreement between the other Latin-American States upon this subject, but undue importance should not be attached to this failure. I have recently pointed out that whether we have regard to the total active armies in the world, or to the total organized forces in the world, we have in this hemisphere, including the United States and Canada, but 6 per cent of the whole. Moreover, the discussion at Santiago did not reveal points of view that must be considered to be utterly irreconcilable. On the contrary, it may be hoped that in the fortunate absence of all causes of serious controversy, and for the purpose of avoiding unnecessary outlays, a basis of agreement to limit armament may yet be reached.

Seventh.—The policies which have been described are not to secure peace as an end in itself, but to make available the opportunities of peace; that is, to open the way to a mutually helpful coöperation. This is the object of the Pan-American conferences. These will be increasingly helpful as they become more and more practical. The object is to create the opportunity for friendly contact, to develop a better appreciation of mutual interests and to find particular methods by which beneficial intercourse can be aided. This bears directly upon the facilitation of exchanges, the protection of health, the promotion of education and commerce and the developing of all the necessary agencies for disseminating information and for improving means of communication. With peace assured and apprehensions allayed, it will inevitably be found that there is less diversity of interest than had been supposed and that there is an ever-widening opportunity for working together for the common good.

Eighth.—It should also be observed that in our commercial relations the United States is seeking unconditional most-favored-nation treatment in customs matters. Prior to the beginning of the present year preferential tariff rates had for about 20 years been con-

ceded by Brazil to certain imports from the United States. This had been an anomalous feature of our tariff relations, since the general policy of this Government has been neither to give or to seek customs preferences. In view of the adoption of the tariff act of 1922, section 317 of which authorizes the President to declare additional duties upon the products of any country that may discriminate against the commerce of the United States, it was felt that this Government could not longer with consistency ask the Brazilian Government to grant to goods of the United States rates which were lower than those which were accorded to similar imports from other countries. In making known, in January last, its determination no longer to seek the renewal of preferential treatment, this Government explained to the Government of Brazil that its policy henceforth would be to seek from Brazil as well as from other countries treatment for goods from the United States as favorable as might be accorded to the products of any third country. Notes have been exchanged with Brazil embodying this policy. The Government is contemplating the negotiation of new commercial treaties with Latin American countries or the modification of existing treaties in harmony with the most-favored-nation principle, excepting, however, as in the case of the exchange of notes with Brazil, the special treatment which the United States accords or hereafter may accord to Cuba, in view of our special relations with that Republic, and to the commerce between the United States and its dependencies and the Panama Canal Zone. Not only does the Monroe Doctrine not mean that the United States has a policy of seeking in the Latin-American Republics economic advantages denied to other countries but it is not the general policy of the United States to seek preferential rights. The commercial treaties which it is proposed by this Government to negotiate with the Latin-American countries are, with respect to the principles involved, substantially like those which it is sought to negotiate with European Governments.

Ninth.—We have certain special policies of the highest importance to the United States.

We have established a waterway between the Atlantic and Pacific Oceans—the Panama Canal. Apart from obvious commercial considerations, the adequate protection of this canal—its complete immunity from any adverse control—is essential to our peace and security. We intend in all circumstances to safeguard the Panama Canal. We could not afford to take any different position with respect to any other waterway that may be built between the Atlantic and the Pacific Oceans. Disturbances in the Caribbean region are therefore of special interest to us not for the purpose of seeking control over others but of being assured that our own safety is free from menace.

With respect to Cuba, we have the special interests arising from our treaty and our part in the securing of her independence. It is our desire to see her independence not weakened but safeguarded and her stability and prosperity assured. Our friendly advice and aid are always available to that end.

I have sketched briefly these affirmative policies of the United States in this hemisphere. We rejoice in the progress of our sister Republics and at the enhanced prosperity which is at their call. The Monroe Doctrine stands, as it has always stood, as an essential part of our defensive policy, but we are no less but rather more interested in the use of the opportunity

which it created and has conserved. We desire no less than they themselves the independence, the peace and progress of all the American Republics, and we seek to enjoy to the fullest extent possible the blessings bestowed by the spirit of con-fraternity, those mutual benefits which should result from our intimate association and our common political ideals.

Dr. Rowe in closing the session spoke as follows:

I AM certain that you all share the deep sense of privilege in being present on this historic occasion. The historian of the future will refer to the Philadelphia address of the Secretary of State as one of the few instances in which the official immediately responsible for the direction of our international relations has laid before the people a comprehensive review of the foreign policy of our country.

Our indebtedness to him is shared by our fellow citizens throughout the land, and extends to nations beyond the seas. The words spoken tonight will carry to every corner of the globe—clarifying public opinion in this country, and making clear to foreign nations the position which America occupies in relation to them.

Mr. Secretary:

The thanks that I extend to you on behalf of this great audience is but a symbol of that larger obligation under which you have placed our country.

The Meaning of the Monroe Doctrine to the Republic of Uruguay

By The Honorable J. Varela
Minister of Uruguay to the United States

Mr. Chairman, Members of the Academy, Ladies and Gentlemen:

WHEN I was on the battlefields of France—not as a warrior, I am not a hero, but merely as a tourist after the armistice—I noticed here and there some bombs still charged with dynamite. If asked by somebody to handle one of those dangerous engines, my fright would not have been greater than when you told me, Mr. Chairman, that I would be called upon to speak on the Monroe Doctrine, in this English of mine, before a learned society of wise men and distinguished women. I am not suggesting, nor denying, that the Monroe Doctrine is a dangerous and powerful engine which would fulminate any outsider, man or people, who dares to touch it, but in any event I am not an outsider, being a citizen of one of the American Continents.

I am here prompted by two reasons. In the first place, because it was delightful to meet you in this splendid and, in the Greek sense, aristocratic city of Philadelphia to which I render my homage. I believe that her magnificent life of today is worthy of her glorious past and of the memorable part she took in the epic of American independence.

Secondly, because the Chairman informed me that nothing in the nature of a formal address was expected. With such understanding and in a merely personal capacity, I am on this platform.

If the Monroe Doctrine is a national policy of the United States, if its interpretation and definition belong solely to the United States, I am speaking of facts, of present facts, not of ideals, what commentary can be expected or uttered by a citizen of another American republic, in my position, other than to express what have been to his own country the results of the existence of the Monroe Doctrine throughout a century?

In South America—my distinguished colleagues will refer to the Northern Continent—in South America are living ten independent nations, each one with her characteristic personality and national aims. Although they have similar history and common aspirations and warm friendship among themselves, they live separated in space, in ways of thinking and perhaps in political development. I am not, therefore, entitled to speak for all but only on behalf of my own country, the Republic of Uruguay.

In the Republic of Uruguay the Monroe Doctrine has done no harm during one hundred years and this is indeed a long enough period of time safely to test any human institution.

We fought our independence against the Spaniards, the Portuguese, the Brazilians, the Argentinians, a century has transformed the old antagonism into warm friendship and even brotherhood, but we cannot refrain from a high appreciation of the fact that the Monroe Doctrine has helped us in avoiding possible new struggles against non-American powers. We well remember that in the earliest years of the 19th century our people who had not yet gained their independence were compelled to fight and defeat powerful armed expeditions sent by Great Britain, supported by her seemingly invincible navy. At that time the Mon-

roe Doctrine had not been enunciated by your famous President. After the Doctrine was enacted no European Power attempted to settle in our territory, and if the British came again to our shores it was no more aiming at domination but to coöperate in high works of civilization, in financial institutions and economic enterprises. They were welcomed in that capacity as are and shall be, very warmly, our great friends the Americans.

What bloody struggles would have been imposed on us if the Monroe Doctrine had not existed? Nobody knows. To conceive an epoch which might have been and was not, would require the insight of a Webster or the imagination of our poet Zorrilla de San Martin, but it is beyond my capacity and I prefer to glance at the future. If the Monroe Doctrine is in future times what it has been in the past, in relation to the Republic of Uruguay, a safeguard, a shield against non-American aggression, long live the Monroe Doctrine.

I said a shield. Allow me to put it in a less dramatic tone. A big fellow wanting his security and, by the way, the security of others, takes or frames a policy of insurance not only for his palace but also for the entire block in which he lives among others. The better for his neighbors, for they too will be immune from incendiarism in certain cases as well as from theft and burglary. The Monroe Doctrine has been that. With it, we have had in some respect what the proud and glorious people of France wanted after the war: security against aggression through the probable coöperation of friendly America.

The friendship toward America in Uruguay has always been very warm and it is today one of the principal aims of our policy under the leadership of President Serrato and Foreign Minister Dr. Manini. This friendship has been strengthened in the last twenty years by the visits of your prominent statesmen. I shall refer to them because they were the occasions of very interesting remarks on the Monroe Doctrine in connection with certain highly progressive republics of South America. The former Secretaries of State Mr. Root and Mr. Colby went to Uruguay on missions of good will and fraternity and by their actions and words increased our admiration for the people and ideals of the United States of America. My country was also visited by a delegation headed by Mr. William McAdoo, whose prominent personality in America gives great weight to the declaration made by him that the United States has consistently and unceasingly manifested deep interest in the welfare of the Latin-American Republics and that this found its first expression in the Monroe Doctrine, enunciated, Mr. McAdoo said, by one of our great Presidents not only for the protection of the United States but for the preservation of the struggling republics of the Western Hemisphere in the days of their infancy.

Also, ten years ago, in 1913, Uruguay was visited by another and most illustrious American statesman who was born a master leader, one who, like the hero of Schiller's poem, was destined from birth to the helm of command. In welcoming him, Mr. Batlle, then President of Uruguay, said these notable words:

> We greet him as the champion of every just cause that has called for his support; the staunch partisan of international justice and of peace with honor, and of force and character placed at the service of the public welfare; the defender of the Monroe Doctrine in the interest of the whole of America.

Then your great man arose and expounded to the Uruguayan people his generous conception of the Monroe Doctrine, and I am willing to believe that on that occasion Theodore Roose-

velt faithfully interpreted the sentiments of the majority of his fellow citizens.

"I am pleased," he said, "with the interpretation placed by the President of Uruguay on my position as an upholder of the Monroe Doctrine. It is in no sense a doctrine of one-sided advantage; it is to invoke only in the interest of our commonwealth of the Western Hemisphere. It should be invoked by all our nations in a spirit of mutual self-respect and on a footing of complete equality of both right and obligation. I congratulate," he added, "the countries of South America that I have visited that their progress is such in justice, political stability and material prosperity as to make them also the sponsors of the Monroe Doctrine, so that, as regards them, all that the United States has to do is to stand ready as one of the great brotherhood of American nations to join with them in upholding the Monroe Doctrine."

So spoke Theodore Roosevelt, and an unhappy fate decided that that message of high statesmanship and coöperation be his farewell address to the South American Republics. No loftier words were ever uttered by any American statesman and the day will come when that message may be engraved in the stone of a Roosevelt Memorial. His principles are still alive and his torch is today in the hands of your Secretary of State, the Honorable Charles Evans Hughes. Mr. Hughes in his addresses has given a most admirable explanation of the Monroe Doctrine, emphatically proclaiming that it does not attempt to establish a protectorate over Latin-American States and magnificently asserting that you have no policy of aggression; that you do not support aggression by others; that you are opposed to aggression by any one of the Latin-American Republics upon any other. This reveals high vision and statesmanship. He has also stated very pointedly that as the Doctrine is obviously not exclusive, much time has been wasted in the endeavor to find in it either justification or the lack of it for every governmental declaration or action of the United States in relation to other American Republics. Therefore, when we appraise the true Monroe Doctrine, as explained by Mr. Hughes, we are neither commending or condemning all the actions or policies of the United States towards the republics of South America, Central America, or the Caribbean Sea. Each case should be judged on its merits or demerits, but that is your business, not the business of a man in my position. It would be presumptuous on my part to attempt to present so vast a subject in so short a time, and also somewhat dangerous for a diplomat, as you will see.

A frivolous prince, afterwards famous as a remarkable king, was once chatting with diplomatic friends. As one of them indulged in excessive freedom of expression, the prince suddenly rang the bell and said to the usher: "This gentleman wants his carriage" . . . and the gentleman went out!

I, for one, neither wish to go or have my carriage or steamer called. I am at present too pleased in this very interesting America. I believe in liberty but as defined by a clever man: "Liberty is the power to discipline yourself in order not to be disciplined by others." This is a good maxim for individuals as well as for nations.

But I do not think I transgress my liberty in expressing an earnest hope that the great words heard last night be tomorrow a reality as the Hughes Doctrine; and that we soon will see the dawn of a united America concerted for the defense of her common interests, and ready to coöperate with Europe in the never ended work of attaining an ever higher plane of civilization and justice.

A Century of the Monroe Doctrine

By Honorable Ricardo J. Alfaro
Minister of Panama to the United States

Mr. Chairman, Members of the Academy, Ladies and Gentlemen:

So much has been said, so much has been written, about the Monroe Doctrine, especially in the last three decades, that it is virtually impossible to deal with it in the expectation of setting forth new facts or statements that have not already been made. The historical investigation seems to be exhausted, in so far as concerns the facts leading to the issuance of the celebrated declaration and its practical consequences during the century it has completed. The student of history and diplomacy can depend upon a veritable wealth of bibliography supported by official documents, where all the facts are exposed. And while the speculative matter seems also to be nearly exhausted, it is possible, nevertheless, to make remarks that draw their interest precisely from the great amount of contradictory opinion—official and otherwise—that has been propounded.

Indeed, the existence of this great amount of conflicting views calls for a continued effort to analyze and study the causes and effects that have a bearing on the original proposition with which James Monroe unfolded before the world the most transcendent phase of the American foreign policy.

It is high time to undertake a complete review of the whole field covered by antecedents and consequences, by correspondence, considerations and propositions concerning the Monroe Doctrine, in an endeavor to fix its meaning, to determine its scope, to point out, on the basis of precedent, its most probable manner and criterion of application and above all to establish the ideological differences between the conception of the Doctrine itself and such conceptions as Pan-Americanism, Imperialism, Hegemony, Non-intervention and Interference, Dollar Diplomacy and other kindred questions that are often confused with the declaration of President Monroe or considered as its fatal and necessary consequence. This is especially desirable from the Latin-American point of view, as, no doubt, a great deal of the apprehension and misunderstanding existing among the peoples south of the Rio Grande in respect to the foreign policy of the United States is due to a misconception of the Monroe Doctrine and its relation to such foreign policy. And I do not think the task is impossible, because the Monroe Doctrine presents such a clarity of expression and has been maintained and applied with such consistency that its essence, its meaning and its scope will strike an ordinary intelligence when the subject is properly studied.

I remember a conversation I had some time ago with a citizen of one of the Southern Republics. The subject of the celebration of the doctrine centennial came up and he said: "My country does not recognize the Monroe Doctrine." Somewhat surprised at this reference to non-recognition of something that has never called for recognition, I ventured to ask: "What is your view of the Monroe Doctrine?" "Well," he replied, "it is the Monroe Doctrine which allows the United States to meddle in the internal affairs of our countries."

I would not say that this represents at all the best of the enlightened opinion of Latin-America, but, judging by the condition of the person who uttered the assertion, it may be considered as a fair sample of the popular feeling about this question.

That happens with the Monroe Doctrine which happens to all things great: that it can be viewed from many angles, and therefore can present a great variety of aspects to the eyes of interested observers. The message addressed by President Monroe to Congress on December 2, 1823, is undoubtedly the most discussed document that has ever come from the pen of an American statesman. Rivers of ink, and mountains of paper have been used in writing articles, speeches, pamphlets and books, in an endeavor to expose, elucidate, discuss and comment upon the meaning and scope of that famous declaration, and naturally as the volume of opinion increases the possibilities of error increase in proportion.

The fundamental principles laid down by James Monroe are expressed in just a few words of his message. He said:

> We owe it, therefore, to candour and to the amicable relations existing between the United States and those (the European) Powers to declare that we should consider any attempt on their part to extend their system to any portion of this hemisphere as dangerous to our peace and safety. With the existing colonies or dependencies of any European Power we have not interfered, and shall not interfere. But with the governments who have declared their independence and maintained it, and whose independence we have, on great consideration and on just principles acknowledged, we could not view any interposition for the purpose of oppressing them or controlling in any other manner their destiny, by any European Power, in any other light than as the manifestation of an unfriendly disposition toward the United States.

Such was the transcendent utterance that for a century has had so great an influence in the international thought and the international life of the Western Hemisphere. But in this short statement there is contained a whole world of ideas, and it opened in the future of the Continent an immense field of political consequences. It is necessary to look back for one hundred years in the annals of the New World to measure the importance and the historical value of that statement.

In 1823 the democratic outlook was far from being bright all over the world. Great Colombia, the creation of Bolivar's genius, had achieved her independence and a magnificent nation had been formed with the territory of what is today Venezuela, Panama, Colombia and Ecuador. Mexico and the five Central American Republics had also attained their emancipation, while further south, Argentina and Chile had won the battles that assured their independence, as well as that of Uruguay and Paraguay. But with all this, Spain was not still totally beaten and the Crown maintained two powerful strongholds which were a serious menace to the new-born Republics: one was in Cuba and threatened the new American democracies on the north; the other one was in what is today Peru and Bolivia and held sway in the south. There the republican armies had one more year of extremely hard fighting, and in fact it was not until December, 1824, that the great battle of Ayacucho sealed forever the political liberty of South America.

With respect to conditions in the Old World we all know how the defeat of Napoleon, and the restoration of the Bourbons, caused a fresh outburst of absolutism that took an alarming expression in the deliberations of the Congresses of Vienna and Verona; in the formation of the so-called Holy Al-

liance; in the bloody policy of persecution carried out by the Monarchists of France, Austria and Spain; in the overthrow of the constitutional form of government in the latter nation, and in the threats against the liberal doctrine, and the principles of democracy.

The pronouncement of President Monroe in the midst of these circumstances deserves the admiration of posterity, because, aside from the fact that it was a measure of self-preservation and national defense, it was an act of bravery. It was a challenge to the liberticide tendencies of the Holy Alliance at a time when the United States did not have the strength that they have lately developed, and when the European Powers had an overwhelming influence in the affairs of the world. It was not only a defiance of the Colonial ambitions of France, Spain and Portugal, but it was also a defiance of British ambitions.

It is a mistake to believe, as many do, that the British Premier, Mr. Canning, was in favor of the Doctrine such as it was proclaimed. Canning, true, aimed at the destruction of the great Spanish empire in America. He purposed not to allow France to get a foothold in the Spanish colonies of America, as she had gotten in the Peninsula. He gave valuable moral support to the new-born Republics and no doubt was instrumental in securing their independence by a benevolent relaxation in the enforcement of the officially proclaimed neutrality. He showed a keen interest in affirming their political as well as their economic life. But while in carrying out his policy he greatly favored the political liberty of the Continent, his motives were above all the commercial interests of his own country, and the purpose of avoiding that the balance of power should be broken to the detriment and danger of Great Britain; and it was in the furtherance of this aim that he made to Mr. Rush, American Minister to London, his well-known proposals in favor of the Spanish colonies struggling for their independence. But it is a proven fact in history that when the energetic dictum of Monroe was known by him he was very emphatic in stating that the Doctrine proclaimed by the American President was unacceptable to Great Britain.

The intent and scope of the Monroe Doctrine is indeed a complicated subject,—and it is in this respect that writers and statesmen entertain most diverging opinions. On the side of the North Americans we find those who, possessed of a rather imperialistic trend of mind, entertain the wrong idea that the Monroe Doctrine is some sort of international gospel making the United States the sovereign of the whole Continent; while others maintain the correct view that nothing was farther from the mind of Monroe and his chief advisers, Adams, Jefferson and Clay, than the idea of a policy of aggression on the Continent.

On the part of the South Americans there are those who adhere to this latter view, while to others the Monroe Doctrine was simply the inception of a policy of continental predominance which has developed into a universal pretext for interference in the political life of the nations south of the Rio Grande and that when expressed by the motto, "America for the Americans," is understood to mean "America for the North Americans." It would be utterly impossible to analyze or even to quote the numerous contradictory views that have been maintained with reference to the Monroe declaration. The task would require the pages of a book, rather than the limited space of a short article. However, some of the most striking Latin views might be mentioned.

It is a fairly general belief in Central and South America that all those events that have caused the aggrandizement of the United States or of its naval and military strength, at the expense of the territorial sovereignty of other nations —European as well as American—are directly attributable to the Monroe Doctrine. It is most common to hear or to read that the pronouncement made one hundred years ago is responsible for the annexation of Texas, for the Mexican War, and for the territorial cessions agreed upon as a consequence thereof. It is pointed out as the cause of the Clayton-Bulwer Treaty, which others have precisely branded as a violation of the principles laid down in 1823. And in the same trend of mind the Doctrine has been the cause of the Alaska purchase, the recognition of Cuban belligerency, the Spanish-American War, the acquisition of Porto Rico and the Philippines, the Platt Amendment, the Treaty of 1903 with Panama, the building of the Panama Canal, the annexation of Hawaii, the acquisition of the Samoan Islands and the intervention in Nicaragua, Santo Domingo and Haiti.

Now, as a matter of fact, whatever is wrong or right in connection with these events, the Monroe Doctrine is not responsible for them and indeed it has nothing to do with them. All of the above-mentioned acts could have taken place in the absence of the message of December 2, 1823. All of those acts are coincident with or caused by the natural process of growth of the nation which had its nucleus in the thirteen colonies. Once the independence of the United States was consolidated, the population increased in numbers and grew richer and richer by constant toil and energy amidst the blessing of peace. With the increase of the population came the necessity of more territory and the expansion to the West and to the South. In turn this territorial expansion created more and more wealth, more and more intellectual development, more and more influence, more and more naval and military strength, until today the nation is in the first rank as a power, is the creditor of the world and for that reason, to a great extent, the arbiter of its destinies.

I do not wish to convey the impression that I am here expressing approbation or disapproval of the American foreign policies during the last hundred years. With the examination of this question, I am not concerned now. My point is that the acts I am referring to have nothing to do with the Monrovian dictum. As a matter of fact the territorial expansion of the United States began years before the presidency of Monroe. It had its inception in the peaceful and foresighted purchase of the Louisiana territory from France in 1806 and in the acquisition of the Floridas from Spain in 1819. The subsequent accessions of the Union were the result of facts and circumstances entirely extraneous to the pronouncement of 1823, as a careful perusal of their history will suffice to show.

It happens that the people of Latin-America do not feel, of course, very much concerned with the history of the United States, and the number of those who have a fairly deep knowledge of it is very limited. On the contrary, every Latin feels greatly interested in learning something about the Monroe Doctrine, of which he hears so frequently. The result is that with an inadequate basis of United States history there is divulged a great deal of literature about the Monroe Doctrine and American continental policy; and ideological confusion on one side and an attitude that oftentimes is openly biased on the other side, are responsible

for a great deal of misdirected prejudice, apprehension and hatred. The peoples of Latin-America, especially those situated in the vicinity of the Caribbean Sea, have undoubtedly very serious and delicate problems to confront in their international intercourse with the United States. The discussion and solution of those problems may lead sometimes to popular discontent and mistrust towards the great Power of the North. But I maintain that it is wrong to put the blame for the unsatisfactory solution of an inter-American question upon the Monroe Doctrine, for it certainly was not intended to foster aggression or injustice on the part of the strong upon the weak. It must be borne in mind that the Monroe Doctrine is an American foreign policy, but the American foreign policy is not all Monroe Doctrine.

Two official utterances made in connection with the Monroe Doctrine have created a great deal of resentment and disquietude in Latin-America. One is the statement made by Secretary Olney in 1895, that "the United States is practically sovereign on this Continent and that its fiat is law upon the subjects to which it confines its interposition." This declaration was unfortunate and has been contradicted by numerous expressions of friendship and consideration by American statesmen, such as Wilson, Root, Harding, and more recently the present Secretary of State, Mr. Hughes.

The other one was the opinion expressed by President Roosevelt in 1905 in connection with the protocol entered into with Santo Domingo and providing for an intervention in the fiscal affairs of that Republic in an endeavor to straighten out its financial difficulties, thereby eliminating a cause of conflict with European creditors, leading eventually to armed European action. This subject of American intervention in the Caribbean States is indeed very interesting, but rather delicate and vast to dwell upon in a short article. I will, however, say this much: the problem is one for which a solution may be found within our own countries, as intimated by an eminent Cuban writer when he said: "Against foreign interference let us oppose domestic virtue."

The Latin-American mind is disturbed by what is considered to be a disparity of criterions in the application and actual enforcement of the Monroe Doctrine, and frequent references are heard of instances of aggression on American nations by European Powers, such as the blockade of San Juan del Norte, Nicaragua, by the British in 1842 and 1844; the blockade, by the same power, of Buenos Aires in 1845; of the whole coast of Salvador with the seizure of the port of La Union, also by the British, in 1851, and the bombardment of Valparaiso and Callao by Spanish war vessels in 1866. These, as we all know, were cases where actual acquisition of territory was, at the earnest request of the United States, expressly disclaimed by the attacking powers.

But irrespective of the mass of opposite opinion, of unlearned criticism, of biased contentions and misconstrued facts, when the history of the Monroe Doctrine is carefully and conscientiously studied, one cannot but be impressed with the consistency and courageous determination with which the United States have given actual application to the principles laid down by their President in 1823.

The first test of the Doctrine came up as early as 1825 when Henry Clay, then Secretary of State, took pains in emphatically declaring to England and France that the United States would not consent to the exercise of sover-

eignty over Cuba by any other European Power than its actual, three-century-old possessor, Spain. This notification was subsequently repeated from the State Department by Van Buren in 1829 and 1830, by Forsyth in 1840, by Webster in 1843, by Buchanan in 1848 and in 1851, by Marcy in 1853, by Seward in 1867, and by Fish in 1870. With equal firmness were rejected propositions tending to a joint guarantee of the neutrality of the Island by the United States, France and England. The United States also declined to recognize the right of visit and search by French ships in Cuban waters and to sanction the hypothecation of the Island to France as a guarantee of a loan to Spain; and it is gratifying to note how all conflicts with European Powers regarding the fate of Cuba finally resulted in the addition of a new sister republic to the family of nations.

New tests followed in the subsequent years. In 1835 a proposed arrangement seeking a British or Spanish protectorate by British settlers in the Bay of Honduras was opposed by the United States. In 1848, when the project of the people of Yucatan of incorporating their territory with the sovereignty of the United States, France or England, was made known, the United States disclaimed any intention as to themselves and strenuously opposed any project whereby either of these two Powers might get control of that Peninsula.

In those same days when General Flores, who had been President of Ecuador, organized an expedition in England in an attempt to invade that country and re-annex it to the Crown of Spain, with whom it was then reported that he had been in negotiations, the American Ministers in Madrid and London were instructed to inform the respective cabinets that the United States would not view with indifference the carrying out of the purposes attributed to General Flores. In 1851 the attitude of the United States was instrumental in preventing the British from gaining a foothold in Nicaragua through the creation of the so-called Kingdom of Mosquitia under British protectorates. In 1858 strenuous objections were made against the disembarking of the French and English naval forces in San Juan del Norte under the pretext of repelling illegal expeditions against the same country at the request of its Government. In 1866, when war broke out between Spain on one side and Chile, Peru and Bolivia on the other, the United States, while announcing that they would be neutral in the conflict, obtained securities from Spain that her hostilities against these countries would not be pushed to the political point and would not by any means lead to the reacquisition by Spain of any part of the territories of these countries. In the same spirit, when Spain announced the intention of occupying the Chincha Islands, the Secretary of State, Mr. Seward, hastened to announce to the Madrid Government that, should Spain persist in that idea, the United States must not be expected to remain in their present attitude of neutrality. In 1870 President Grant opposed the cession to Italy of the Island of St. Bartholomew, one of the lesser Antilles, by the Kingdom of Sweden and Norway, and in 1880, Evarts, Secretary of State, manifested his opposition to England's obtaining from Honduras the Bay Islands, which it was rumored at the time she was seeking. In 1885 Frelinghuysen took the position that the United States would not allow Haiti to cede to France the Mole St. Nicholas or the Island of Tortuga, and the same declaration was made two years later with respect to the Island of Tortuga,

when it was announced that Great Britain intended to seize it. In 1888 Secretary of State Bayard made an equal announcement to France when the negotiation of a protectorate over Haiti was publicly announced as a forthcoming possibility.

There is only one case of importance in which the action of the United States may be considered to have been weak in the presence of an accomplished fact entailing the acquisition of American territory by a European Power. That was in 1861, when a political movement took place in Santo Domingo, which resulted in the re-annexation of that Republic to Spain, a state of things that lasted until 1865. The cause of this deviation from the firm policies followed before and after that period is not difficult to find: the event took place exactly at the same time the terrific struggle of the North with the South was going on, and the existence of the nation as a Union was at stake. Evidently the United States could not push its exigencies in accordance with the Monroe Doctrine to the extreme of using against Spain the naval and military forces so badly needed in the Civil War. As it has been aptly said, "When your own home is afire you cannot be expected to help in putting out the fire in your neighbor's home." But in the midst of the distressing circumstances, the principle was saved, for the United States did not fail to enter their protest and to re-assert the fundamental principle of 1823.

The Civil War no doubt was a dominating factor in the amount of vigor used in enforcing the Monroe Doctrine during the years of that tremendous struggle. Besides the case of Santo Domingo, the establishment of the Maximilian Empire in Mexico under the pressure of French bayonets affords a striking example. From the beginning of the controversy between that country and England, France and Spain, the United States made strenuous representations to the three Powers in an endeavor to avoid their armed intervention. However, Vera Cruz was occupied by the combined fleet of the Allies by the end of 1861. The United States obtained assurances that the Europeans had no political aims, but after the withdrawal of the British and Spanish forces in 1862, the French remained in the country and constituted the main support of the throne offered to the unfortunate Austrian Prince. Diplomatic negotiations were continued with unfailing persistency, but after 1865, when peace had been reestablished in the United States and troops were available for military action if necessary, the pressure upon Napoleon III became stronger every day and the withdrawal of the French troops was effected when 50,000 American soldiers were massed along the Mexican frontier, ready to uphold the principle that the American Continent had been closed in 1823 to the political control of European nations.

The whole course of the United States in the Mexican crisis and the stand taken by President Cleveland in 1895 in the conflict between Venezuela and Great Britain over the boundaries between the former country and British Guiana and by President Roosevelt in 1902 in the crisis of the European pecuniary claims against the same Republic, are assuredly the instances in which the Monroe Doctrine has been upheld in a most brilliant, sensational and victorious manner. And in those instances the United States showed a love of justice and a courageous decision to fight for its avowed principles that are to be admired forever as constituting one of the most brilliant pages of their history.

It is futile to say that the Monroe Doctrine was an egoistical expression,

aiming as it did, at the protection of the national interests of the United States. All human actions are egoistical—individual as well as national—but an action is commendable or hateful in proportion to the amount of good or evil it may produce to others. The fact is that the pronouncement of 1823, besides satisfying a vital necessity of national defense, has redounded to the benefit of the Latin-American nations by defending them from those possibilities that have endangered their independent life.

I believe the hour approaches when the application of the Monroe Doctrine will be looked upon more as a subject of historical interest than as a problem of high concern. With the growing stability—political as well as financial—of the southern nations; with the increase of continental solidarity and the tightening of trade and intellectual bonds between Latin-Americans and Anglo-Americans; with the consolidation of the United States as a great power, whose attitude is decisive as to the momentous questions of the world; with the sovereign influence which public opinion exercises in the policies of civilized peoples and the continuous efforts of public associations, centers of education, jurists and publicists to enlighten that public opinion and promote the cause of international justice, there is every hope that within a few decades no more cases will arise where an enforcement of the principles laid down in 1823 will be necessary or where the same may be wrongfully invoked for any purpose. When that day will arrive, the principle will continue to live but the problems will cease to exist, and the Monroe Doctrine, exalted by its tradition of honor, justice and valor, will continue to receive in the forthcoming centuries the glorification to which it is entitled.

Under the ascendency of the Monroe Doctrine we have seen European ambitions barred from the Western Hemisphere during a century that has witnessed the colossal development of European colonial policies in every other corner of the earth: in Asia, with its swarming populations of hundreds of millions; in Africa, where only one sovereign nation has survived the storm of imperialism; we have seen the republican system of government established in all the countries of our continent where three empires had found an existence in days gone by; we have seen the cause of peace promoted and the progress of inter-American trade increase to an astonishing volume; and, above all, we have beheld the birth and expansion of Pan-Americanism, this feeling of continental solidarity, this common pride in our institutions; this common confidence in our future; this indomitable will that the lands discovered by Columbus shall be the abode of a better humanity in the future, able to pursue its own welfare amidst the blessings of peace and democracy, free from jealousy, prejudice and greed, and ever inspired in those ideals of justice and fraternity through which the reign of international happiness can be made permanent upon the earth.

The Meaning of the Monroe Doctrine to Honduras

By THE HONORABLE SALVADOR CORDOVA
Minister of Honduras to the United States

Mr. Chairman, Members of the Academy, Ladies and Gentlemen:

IN proportion as the power of Spain declined, Great Britain enriched herself at the expense of the nation upon whose dominion the sun never set. The Bay Islands (*Islas de la Bahía*), an important archipelago in the gulf of Honduras, a short distance from the coast of Honduras in the Caribbean Sea, were occupied by the British on several distinct occasions during the 17th, 18th and the first half of the 19th centuries, being returned to Spain upon the termination of the series of wars between that country and Great Britain.

On September 15, 1821, the provinces which formed the Captain-Generalcy of Guatemala—today comprising the territory covered by the Republics of Central America—proclaimed their independence from Spain. By reason of this historical fact, all the Spanish possessions in the gulf of Honduras passed to the dominion of Honduras which then formed part of the Central American Federation, and as soon as this Federation was definitely dissolved in 1840, they remained an integral part of Honduras, as a sovereign republic.

In 1841, Great Britain again occupied the Bay Islands. The government of Honduras protested, but then, as now, the protest of the weak was not heeded. Eighteen years had passed since the enunciation of the Monroe Doctrine, and still the nations of the Old World in their aspirations toward territorial aggrandizement appeared to be ignorant of that doctrine; and it was then that the statesmen of this country proposed making effective the meaning of the Doctrine promulgated by the great President whose name it bears, and from their action there came into being the Clayton-Bulwer Treaty, signed in the city of Washington, April 19, 1850, by the United States and Great Britain.

Article 1 of the Clayton-Bulwer Treaty stipulates that

> neither the government of the United States nor that of Great Britain shall occupy, fortify, colonize, assume or exercise dominion over any part of Central America.

In spite of the signing of the said Treaty, the Governor of the English colony of Belize, on July 17, 1852, issued a proclamation announcing the establishment, in the name of the British Crown, of the Colony of the Bay Islands (*Islas de la Bahía*). The brigantine "Persa," of the British Navy, took possession of the said islands. This violation of established right made a profound impression on the people of the United States which had its reflex in the United States Senate, where, on December 30, 1852, General Cass submitted a resolution which was unanimously adopted by that exalted body, requesting the President of the United States to transmit to the Senate all the information in his possession with respect to the said violation. A committee named by the Senate submitted its report on the third of the following January, in which it was declared that the Bay Islands, situated in the gulf of Honduras, were an integral part of the Republic of Honduras. This report was approved

by the Senate. At the same time, President Pierce in his Inaugural Address, on March 4 of the previous year, had reaffirmed in the most explicit terms the fundamental principles of the Monroe Doctrine.

As Great Britain's attempts at territorial expansion in Central America had not ceased, it became necessary to negotiate a new treaty between the United States and that country,—the treaty known as the Dallas-Clarendon Treaty, signed on October 17, 1856. In this Treaty it is again stipulated that the Bay Islands belong to the Republic of Honduras.

Years before, during the preliminary negotiations attendant upon the Clayton-Bulwer Treaty, British naval forces took possession of the port of Amapala on Tiger Island (*Isla del Tigre*) in the gulf of Fonseca on the Pacific coast. The port belonged unquestionably to Honduras. The President of Honduras immediately thereafter entered into a convention with the diplomatic representative of the United States, Mr. George Squier, of grateful memory to all Central Americans, by virtue of which Honduras transferred to the United States for a certain period of time the dominion and jurisdiction over Tiger Island. In order to avoid becoming embroiled with this country, the naval forces of Great Britain then evacuated the Island.

This brief historical review discloses the deep significance of the Monroe Doctrine to Honduras. Without it, her national territory might very well have been dismembered, and over her beautiful islands in the Atlantic and Pacific there might be floating today the flag of a foreign power. We have full confidence that, faithful to the spirit and tradition of justice which is the fundamental basis of her political and social structure, this great country will always be not only the jealous defender of the Monroe Doctrine, under the shadow of which the other nations of this hemisphere are safe from the attacks of the nations of the other continents, but also that, like an elder brother, the strongest and most prosperous of this hemisphere, she will never forget that she has duties to fulfil toward them, and that she will be to them an emblem on which is inscribed in luminous letters the words Equality, Fraternity and Justice. Equality, because before Divine Justice, as before human, all men are equal; Fraternity, because the Martyr of Golgotha bade men "love one another"; and Justice, because the principles which rule between individuals should rule in the reciprocal relations between independent nations.

The Monroe Doctrine and Latin-America

By Philip Marshall Brown
Professor of International Law, Princeton University

Mr. Chairman, Members of the Academy, Ladies and Gentlemen:

I. *The Monroe Doctrine is based on the fact that Europe has a system of political interests unlike those of the American Continents.*

THE European political system depends on shifting alliances to maintain an uncertain "balance of power." This requires a technical and complicated kind of diplomacy which American statesmen are not trained either to understand or, fortunately, to observe.

Washington clearly saw this in 1793 when, against the promptings of his own loyal gratitude to France, he decided that the United States must adopt a policy of neutrality respecting "the combinations and collisions of (European) friendships or enmities."

Jefferson realized this fact too late after Napoleon had maneuvered the United States into a fruitless war against Great Britain.

Monroe, likewise, understood this when the Holy Alliance sought to suppress democracy in the New World as well as in the Old. He avoided the pitfall contained in the suggestions of Canning, the British Minister for Foreign Affairs, that would have ranged the United States on the side of Great Britain against the Holy Alliance, though Canning, curiously enough, boasted that he had "called the New World into existence to redress the balance of the Old."

Every President in turn has been made to realize the great gulf that separates the political system of Europe and that of this hemisphere until, under the emotion of the Great War, we were tempted to believe that by playing the modest rôle of evangelist, lawgiver and policeman, the United States would be able to constrain the nations of Europe to completely change their ways! The events since 1918, however, have demonstrated all too painfully that they still adhere tenaciously to the principle of Balance of Power. This has been evidenced in the efforts of the Great Powers to obtain territorial and other special advantages in the Near East, and also in the consistent policy of France to further her interests through alliances with Great Britain and the United States, as well as with the smaller powers of Europe.

The influence of this principle of Balance of Power is most strikingly shown perhaps in the unremitting efforts of the European Powers to vitiate the Monroe Doctrine and actually to make the New World "redress the balance of the Old." The Monroe Doctrine has been declared by the Covenant of the League of Nations (in the French text, which is the exact reverse of the English) to be "not incompatible with any of the dispositions of the present Pact." The Doctrine remains undefined except as a "regional understanding;" and there are British authorities who blandly assure us that: "Should any dispute as to the meaning of the Doctrine ever arise between American and European Powers, the League is there to settle it!" As a matter of fact, the League attempted to mediate in 1921 in a dispute between Costa Rica and Panama concerning an

arbitration award by the Chief Justice of the United States.

The *bloc* of Latin-American nations represented in the League is so strong that their vote and influence is constantly sought by the European Powers who thus are trying to draw the New World more and more into their political system. A special bureau of the League has been organized to deal exclusively with Latin-American affairs.

This tendency of a Europe still under the sway of the vicious principle of Balance of Power to intrude in the affairs of this hemisphere is one greatly to be deplored and resented.

II. *The United States has the sovereign right to protect its national interests irrespective of the Monroe Doctrine.*

This truth has been forcefully expressed by Secretary Hughes in his address before the American Bar Association on August 30, 1923:

> The decision of the question as to what action the United States should take in any exigency arising in this hemisphere is not controlled by the content of the Monroe Doctrine, but may always be determined on grounds of international right and national security as freely as if the Monroe Doctrine did not exist.

And again:

> . . . the Monroe Doctrine as a particular declaration in no way exhausts American right or policy; the United States has rights and obligations which that Doctrine does not define.

This fact is illustrated by the notice served by the United States Senate in 1912 when there was reason to believe that Japan was seeking a naval base in Magdalena Bay in Lower California:

> . . . that when any harbor or other place in the American Continent is so situated that the occupation thereof for naval or military purposes might threaten the communications or the safety of the United States, the Government of the United States would not see without grave concern possession of such harbor or other place by a corporation or association which has such relations to another government, not American, as to give that government practical power or control for naval or military purposes.

This right of the United States to protect its interests irrespective of the Monroe Doctrine is illustrated also in the drastic action taken by President Roosevelt in 1902 to avert what seemed to be an insidious attempt by Germany, under cover of the blockade of Venezuela by Great Britain, Italy, and Germany, to acquire a naval base in dangerous proximity to the Panama Canal.

Whether in Venezuela, Panama, Cuba, Mexico, or in any other similar situations, the United States will always have its own immediate interests to conserve and protect. They are primarily matters of neighborhood concern: they are not regulated by the Monroe Doctrine.

III. *The United States has no valid reason or right to arrogate to itself the sole interpretation of the Monroe Doctrine.*

This Doctrine is essentially a Pan-American principle that concerns all the nations of this hemisphere alike. The United States may at times be constrained in an emergency to take the lead in its defence; but this principle cannot rightfully be claimed as our own private property. The other American nations properly resent such statements as Secretary Hughes, most unfortunately, has seen fit to quote with approval from President Wilson:

> that the Monroe Doctrine was proclaimed by the United States on her own authority. It always has been maintained and always will be maintained upon her own responsibility.

From the Latin-American point of view there is no sound reason, either in the very nature of the Doctrine, or in the fact emphasized by Secretary Hughes of the right of the United States to protect its own interests irrespective of the Doctrine, why the United States should claim it so assertively as private national policy. The more we explain its content, and disclaim any ulterior motives, the more the nations of this hemisphere distrust the United States or accuse us of international bad manners.

There is no use denying the fact that, in spite of the natural courtesy and forbearance of Latin-Americans in commenting officially on this subject, they were deeply offended by the action of the United States at the recent Pan-American Conference in Chile in not permitting the Monroe Doctrine to be formulated in terms to which all the American nations could cheerfully subscribe on a basis of mutual equality and friendly confidence.

Whatever may be the reasons of state which may seem to justify this policy of exclusiveness concerning the Monroe Doctrine, it has been a policy productive of lamentable results without any apparent compensating advantages. The possibility of a genuine understanding and sympathy with these nations is becoming increasingly difficult.

IV. *The relations of the United States with the other American nations are not regulated by the Monroe Doctrine.*

These relations are certainly affected at times by our interpretation of the Doctrine, as in the case of Santo Domingo and Haiti, or of Mexico. But the policy, for example, of withholding the recognition of new governments founded on violence, or of delaying recognition for diplomatic reasons, has no proper connection with the Doctrine. It is rather an unfortunate instance of the offensiveness of American policy to the other nations of this hemisphere.

The truth is, that in spite of obvious difficulties of a diplomatic nature for which the United States is not entirely responsible, its relations with the Latin-American countries demand a fresh orientation and an invigorating spirit of broad, generous statesmanship. The attempt of Europe to vitiate the Monroe Doctrine, if not the constant necessity of perfecting our relations with all our neighbors, requires a true Pan-American policy. There is evident need of a "regional understanding" respecting the vital problems that concern this hemisphere in sharp distinction from the special problems of the European political system. The Pan-American Union in Washington exists for this very purpose. It cannot adequately fulfil this high purpose, however, so long as the United States refuses to admit all the nations of the Union into full partnership as "co-guarantors" of the Monroe Doctrine, to quote President Roosevelt.

We are in a fortunate position if we know how to utilize our advantages for the good of this portion of a distracted world, as well as for the interests of world peace in general. Detachment from European politics is not isolation: it is freedom of action in behalf of the ideals that mean most to all mankind.

Misinterpreting the Monroe Doctrine

By Harry T. Collings
Professor of Economics, University of Pennsylvania

Mr. Chairman, Members of the Academy, Ladies and Gentlemen:

An international doctrine is as strong as its weakest interpretation. It becomes a power in the affairs of men only when there is entire agreement in the understanding of its essential tenets. In this respect the Monroe Doctrine has suffered. A hundred years of diplomatic history have not beclouded its principles but popular prejudice has read into them interpretations and extensions alien to the original declaration.

It has been anathematized by foes and eulogized by friends—often when neither knew its essential tenets. It has been bandied about by an indifferent populace; it has been reverenced as a "second Declaration of Independence." A prominent Latin-American lawyer (Dr. Drago) approves it as "a formula of independence," while a fellow-countryman of his (Dr. Quintana) condemns it as "North American imperialism." An American professor (Professor Hiram Bingham) denounces it as an "obsolete shibboleth," while a President or Secretary of State of the United States regards it as the Magna Charta of opportunity for the Latin-American republics. Interested capitalists, disinterested laborers have approved or censured this doctrine as suited their aims or fancy—and yet withal it has been the corner stone of our foreign policy. Bismarck once denounced it as an "international impertinence." There is no impertinence in the doctrine itself—the impertinence lies in its misinterpretation.

The original pronouncement of President Monroe contained only two tenets: (1) That the American Continents were "henceforth not to be considered as subjects for future colonization by European Powers," and (2) that we should consider any attempt on the part of European governments "to extend their system to any portion of this hemisphere as dangerous to our peace and safety." It was nothing more than a common-sense statement of the fact that the United States had a right and duty to protect its own interests, and further, was, and is now, more concerned in the welfare of our southern neighbors than any European Power can be. It meant this—no more, no less. Secretary Root asserted in 1914 that, with the apparent exception of an extension by President Polk, there has been no change or enlargement in this principle since it was promulgated.

Monroe's statement in 1823 was warmly received in Latin-America. It reassured the new republics in their stand for independence. Colombia proposed that it be ratified at the Congress of Panama in 1826, calling it the "gospel of the new continent."

If such are the facts—and few dispute them—wherein lies the difficulty? The answer seems to be in one word: "misinterpretation." It has been my privilege to live in Latin-America and to know many Latin-Americans; and I have yet to meet one of them who does not hold the view (1) that these countries should remain independent states, and (2) that they should continue to be republics. These—the only two propositions of the Monroe Doctrine—are warmly supported from the Rio Grande

to Punta Arenas. There is, however, a mistake, common both in Latin-America and in the United States, of regarding other of our national policies as essential parts of the Monroe Doctrine.

In the first place we may recall that for more than a century we have refused to "implicate ourselves" in the vicissitudes of European politics. But this doctrine of isolation was made a basic one in our foreign policy by the Farewell Address of President Washington, thirty years before the famous message of President Monroe. Nevertheless, a recent printed circular, speaking of the loss we are sustaining from our participation in European affairs during the recent war, boldly states: "This loss is America's penalty for allowing the Monroe Doctrine to be broken."

Again: For more than a generation we have placed restrictions, more or less stringent, on immigration into the United States. For this policy we have been criticized as the "great power in North America, which closed its doors under the Monroe Doctrine." Even our own people have berated our Government, or at least the party in power, for participation in Latin-American affairs. "We dominate in American affairs" runs the argument of citizens of both North and South America, and forthwith they set down this domination as the essence of the Monroe Doctrine. Since the days of Bolivar the best minds of this hemisphere have advocated the working together of all the republics of both continents for mutual advantage—the doctrine of Pan-Americanism—only to be rebuffed both here and abroad by the argument that Pan-Americanism is but a cloak for sinister motives; that it is only a new interpretation of the Monroe Doctrine.

These and other of our national policies are thus misconstrued as part and parcel of the statement of 1823. If the policy of isolation which we have pursued for a hundred years previous to 1917 is not defensible, if the immigration restrictions we have imposed during the past generation are not justifiable, if the so-called imperialism of our country is not desirable, if the predominance of the United States in affairs of this hemisphere is not reasonable, if Pan-Americanism should be replaced by a better plan, then let each of these policies be approved or condemned on its own merits. It is not the province of this brief discussion to argue for or against any of these policies. The purpose here is rather to call attention to the fact that no one of them is an integral part of the great pronouncement, the centenary of which we now celebrate. That the Monroe Doctrine has a bearing on all of them must be admitted; that it includes or implies all, or any one of them, is emphatically denied.

What can be done then? Two things seem reasonable and possible. Shorn of its accretions the Monroe Doctrine is acceptable to our own people and to Latin-America. The 20th-century Monroe Doctrine was admirably defined by Secretary Root in 1906; it has been even more definitely defined (at this celebration) by Secretary Hughes. This is the first step in the elimination of its misinterpretation. The second step is more difficult but none the less reasonable or possible. Latin-American republics should have an increasing part in the maintenance of this policy. These republics, especially the more important of them, are not wards of any nation. They are independent self-governing states whose voice in international affairs is each year carrying added weight. They have their weakness, but let him who is without sin among all nations cast the first stone at them. The policy under discussion

was pronounced by a citizen of the United States, and by that country it has been maintained for a century; for the coming years it devolves upon the citizens of Pan-America to maintain its principles.

In conclusion one may say that it is not the Monroe Doctrine itself, but haphazard interpretation of it that has aroused opposition both here and abroad. It is neither an "obsolete shibboleth" nor a golden rule. It is rather a common-sense principle which has thus far preserved for the Americas a large measure of peace and prosperity. It merits and receives, when freed from its distortions, unqualified approval. For the United States it warrants neither interference, hegemony or domination; for Latin-America of the 20th-century it implies neither insignificance, subservience or annihilation. We of the United States should realize more clearly the meaning of this policy and then maintain it without dictatorial aim or tactless assertion; our Latin-American friends as well should understand its real meaning and then support it as a well spring of their prosperity. To insure its safe and continued maintenance the Monroe Doctrine deserves and should have the unqualified support, not of the United States alone, not of Latin-America alone, but of both—of a United Pan-America.

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